The Builder.

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Architectural Notes in San Francisco.

A STUDENT of architecture who should roam as far as the Pacific coast of the United States, and wander up and down the steep grades of San Francisco streets, would find varied and unexpected entertainment; as varied in regard to architectural style as if the city were as many centuries as it is years old, and had felt the influences that have made Europe an architectural museum. Not that the architecture of San Francisco is a reproduction of anything that ever existed; but it is a reminder of everything that ever existed, and withal there is a nonchalant disregard of the inevitable expression inherent in material. If the architecture of San Francisco were simply the result of ill-considered attempts to provide temporary accommodation at the least expense, like that of so many Western towns, the whole question could be disposed of in a few words, with the assurance that permanent conditions and accumulated wealth must sooner or later be accompanied by the usual manifestations. But as the architecture of San Francisco, however ill-considered, is not an attempt to provide temporary accommodation, and is not markedly economical,—often markedly extravagant,—its peculiarities are not to be accounted for by pioneer conditions, or by lack of means.

The State of California is very rich in quarry beds of granite, sandstones, and marbles; and while these materials have been exported in large quantities, the prevailing dread of seismic disturbances has prevented the general employment of other materials than wood in San Francisco and the other large towns. There are instances of brick buildings in the older and more level parts of the city, and instances of buildings constructed mainly of concrete, but the number of such buildings is not sufficient to disqualify the assertion that San Francisco is a wooden city by fear, not from choice.

The climate of San Francisco is mild and foggy, with no great variations of temperature, so that an ordinary frame-building on a light foundation is practically sufficient for any purpose. When these conditions are understood much that seemed arbitrary and absurd is seen to have a rational origin; though the superabundance of moulding, carving, and turning that has no individual or relative value remains wearisome enough, and does not alleviate a general effect of monotony. There is probably no city in the world where so many bay windows are to be seen, destroying all sense of architectural repose in every direction; and as there is nothing to be seen by looking out of them but similar excrescences, they must be born of the irresistible desire to get something for nothing under the provisions of the city ordinances, which permit an encroachment beyond the building line of 3 ft. for the purpose of a bay window, "provided said bay shall not be more than 9 ft. in width nor within 6 ft. of any other bay window, and provided said bay shall not be more than three stories in height, nor less than 13 ft. above the side walk to the under side or soffit." In streets of very steep grade, with as many bay windows on each side as the letter of the law allows, and every one beginning and terminating on a different level, the effect is very disquieting; and this effect is only enhanced by the variety of conceits in the shape of turrets, belvederes, crenelated and tesselated towers, Moresque domes, and Oriental pagodas, that crown these circular, square, hexagonal, octagonal or elliptical bays. The difference between a modest dwelling and a "palatial residence" is mainly one of size, and of the quantity of ornamentation made to adhere to the exterior; and confined to the street front at that, for beyond the mere necessities of decent living, we shall find every additional penny of expenditure flaunted on the outer walls. There are a number of very large and very expensive houses in San Francisco on which every luxury obtainable for money is lavished; but these extravagant indulgences are in the worst possible architectural taste,—with one or two exceptions, and these are not models of excellence.

The fear that built San Francisco of wood has within the past few years been supplanted by a new dread of fire; and the rebuilding of the business district of the city has been fairly begun with brick and terra-cotta, granite, iron, and steel; in two instances already towering to eleven stories in height, in defiance of earthquakes. The "fire limits," as the boundaries of the district are called, within which no wooden structure can be erected, are steadily expanding in spite of strenuous opposition from property-owners, and perhaps twenty years hence San Francisco may lose, or rather outgrow, much of her architectural eccentricity. For unless those bay windows, which are as constantly a feature of commercial as of domestic buildings, are to be constructed of iron or steel, their excessive cost must necessarily abate them. There is already an alarming array of galvanised sheet-iron protuberances, painted and sanded to match, accompanying sandstone or terra-cotta, but as these are mere casings of wooden frames they are very little less dangerous in fire than wood construction entire, and the underwriters will probably take measures to abolish them. The underwriters have awakened to the fact that it is quite unnecessary that the United States should sacrifice more than 50,000,000*l.* per annum in fires that could be avoided by spending 25 per cent. of the amount in improved construction; to say nothing of the saving such simple precautions would effect in the running expenses of the fire departments. San Francisco has had several very narrow escapes from destruction by fire, and as the wind may not die, or very obligingly shift, or a heavy rain-storm come up next time, there is a general disposition not to rely altogether on the non-combustible character of the Redwood timber, which has undoubtedly been the main reliance. Even the enforced "decoration of construction" by the adoption of permanent material, instead of "constructing decoration" out of all sorts of flimsy makeshifts, cannot well bring about very important architectural results in San Francisco in less than twenty years, because the purse-strings are held by men who are for the most part without education, while, as a natural consequence, or at least a natural accompaniment, professional standards are very low. Architecture is a mere business, in which any person engages

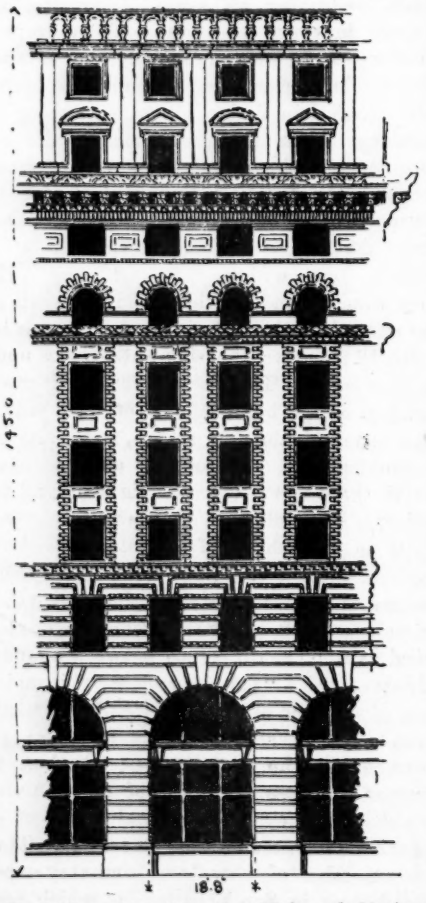
who thinks he can control enough influence to make it pay. Draughtsmen are always to be had with more or less experience; and so, between them and the contractors, something is determined on that the owner will accept. What with constant open competition, constant personal solicitation, throat-cutting in commissions, and unscrupulous favouritism, with its concomitant spoils, architecture fares as it can. We would not be understood to assert that there are no true architects in San Francisco, for we are acquainted with several, but their experiences would discourage the stoutest heart, and render futile the most thorough professional equipment. It is unfortunate that the education and experience that enables a man to make money should generally unfit him for spending it, and, therefore, we must look to the next generation of property owners in these parts for a better state of things, as they will inherit fortunes they have not soiled their hands in accumulating, and may acquire a taste for something else; at least, they may learn to treat with respect "the elder, or fairer, sister of Science, whom we love all the more that her usefulness cannot be demonstrated in dollars and cents."

If it is true, as Mr. Lowell says, that a nation has a right to be judged by its best, it should be true of a city; and we would have it understood that in selecting a few San Francisco buildings for comment, we are actuated by the desire to make the best possible showing. We have also selected such as are fairly representative of existing activity, because in no other way can the San Francisco we must reckon with be appreciated. The city has passed through many phases in her short and eventful life, but she is probably now safe from any atavistic tendency, and must ultimately become the second city in the United States. Therefore, structures that no one would think of erecting now, and which must sooner or later be demolished, have no representative interest in this connexion.

Of Government buildings we fear we can say nothing, for, although the City Hall is still incomplete, it is now past hope; although originally a generous scheme, now only a monument to incapacity and political jobbery on a large scale. Such other courthouses, police buildings, and fire department buildings as there are, both old and new, lower rather than raise the standard suggested by the City Hall. From the large hotels we shall derive very little encouragement, unless we go in to look at the most recent interior fittings and decorations, much of which are excellent in design and execution, and must set the standard in such matters for a long time to come. The theatres, as is usual in America, are not buildings for the purpose, but mere entrances through a hotel building to an auditorium, where the achievement is seldom so much an architectural one as a matter of colour, decoration, upholstery, and modelling in plaster; and there is nothing in San Francisco of this kind that is either better or much worse than we are accustomed to elsewhere. Of banks and corporation edifices there are, as yet, but three completed instances in the way of modern improvements; the *San Francisco Chronicle* building, the home of the largest daily paper; the First National Bank building, and the Crocker Wolworth National Bank building. Of these the Crocker building is the largest, the tallest, the most expensive, and, on the whole, the most successful architecturally. The first two stories are included in a granite arcade of rusticated channel work, very similar in design to the *porte cochères* of more than one Florentine palace, but the dignity of the treatment, so dependent on the massiveness of the piers, is sacrificed to the inexorable demands for light; and the actual mass of material is reduced to the engineer's margin of safety; resulting not only in an apparent effect of weakness, but exaggerating the span of the arches to a sprawling expression destructive of repose. Upon this inadequate base is imposed a structure of ten more stories in buff brick and buff terra-cotta; and, in spite of a good deal of bold modelling, an effect of flatness and meanness has not been avoided. The fact is that the mere repetition of details that are in themselves ill-assimilated copies of stone

"Chronicle" Building, San Francisco.

examples from much smaller and very different structures must prove a very imperfect solution of the difficulties arising in such conditions. The shape of the lot is a



Part Elevation of Crocker Wolworth National Bank Building, San Francisco. (Total length of two street fronts, 329 ft.)

triangle, resulting from the intersection of two streets at an acute angle, and no more effective treatment seems to have been suggested than the rounding of the angle and the reduplication of one arch, with the windows and cornices above, for the length of the resulting street fronts; with such contractions, stiltings, and omissions as become inevitable on approaching that acute angle from either direction. To mitigate the effect of compromise to some extent, the entrances have been emphasised by engaged shafts of very pronounced entasis, and, though the columns are decidedly Tuscan, the caps are very perfect reproductions of the Ionic capitals of the Erectheum in white marble! The volutes, with all their delicate chiseling, are nevertheless chipped and chopped off where necessary to stop against the granite.

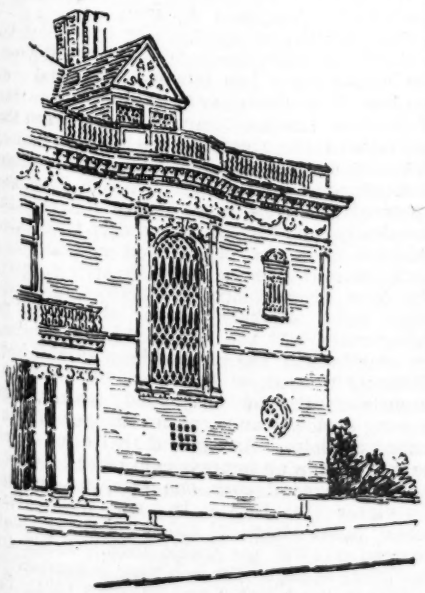
These buildings are, of course, only partly occupied by the Corporations in whose names they are erected, being mainly devoted to offices that are rented for all the usual purposes, so that the new Mills building, not yet completed, which is an office building, may properly be ranked with them. This building is sufficiently near completion to display its real character, which is, allowing for the advantage of a square corner site, the most dignified design yet attempted in San Francisco. Whatever one might find to criticise if desirous of being very nice, it is nevertheless a whole, a pile with its essential parts and its culminations,—in fact, an architectural thing with a skeleton, a constitution, and a manner. There are things, and have been many, that show higher breeding, and are the results of much more cultivation than this building shows; but we must not ask too much. This is, at all events, not a lout or a clown dressed in its betters' clothes. San Francisco is still very far from "that good taste which is the conscience of the mind" in architecture, but we begin to believe it may yet be awakened when we see generous spaces of wall left without enrichments, together with simple aspiring lines uninterrupted, in a building whose treatment in other respects assures us that parsimony has played no part in determining the questions involved. Speaking of simplicity and dignity, it is to be regretted that the United States Mint building, already nearly thirty years old, could not have been erected on a more prominent site, where it could have confronted the city denizens on their daily rounds; for while of its type there are many better things in various places, there are none here; and there is a repose and refinement about such things that it is well to be familiar with. A young architect is enticed by the fashions and the whims that arise from time to time, but he returns to his order with that sense of reliance and appreciation which comes with maturity.

There is as yet nothing ecclesiastic in San Francisco that can properly be cited as either representative, permanent, or good. It is not a city of churches, though of the old Spanish occupancy there still remain some very picturesque reminders in the outlying districts; but their influence has not proved strong enough to prevent the erection of hideous contrivances side by side, with just enough conventional character to show the intention of building some thing that must pass for a church, whether in brick, stucco, or wood. The new Roman Catholic Cathedral can hardly be cited as an instance of ecclesiastic architecture, as no one would suspect its having been intended for anything more serious than a masonic hall or institution of some sort, and it should be said that the local pride has not felt flattered in the acquisition. The libraries have done very little in architecture to emphasise their importance, only one having as yet been provided with its permanent home, and in that instance there seems very little opportunity to draw any conclusions of interest. A square two-story yellow-brick building of Italian design; a mere repetition of round-headed windows, one of which, carried down, serves as a doorway, with meagre tablets on either impost setting forth the necessary information; some scanty enrichment in bead and shuttle ornament; a very diffident cornice above, inadequately supported on infrequent modillions all in terra-cotta,

and our description is exhausted. Before many years more are gone, probably a good deal will be done in providing the different Clubs with suitable habitations, as at least half-a-dozen have already acquired property for building. The Clubs are now either perched above shops, or occupying makeshift quarters adapted from some dwelling-house. The German Club has recently completed an ambitious pile that is somewhat difficult to describe, being a sort of compromise between a Romanesque basilica, a fourteenth century French château, and a Turkish mosque; but the strong yellow sandstone, with flaming red brick, the very slight recession of the multifarious windows, and a conceited air of "look at me, now that I am finished!" give it a character all its own.

Such things, of which this club-house is only one instance, incline one to the belief that the essential education in architecture is as to the nature and capabilities of materials, both as a matter of construction and resultant expression. To see stone, terra-cotta, wood, and metal used indifferently throughout the same building, as if it were of no consequence which is used, so that a certain arbitrary form is realised, which form, as might be expected, is often senseless and absurdly suggestive of something entirely different and irrelevant, is the most discouraging manifestation of modern ingenuity.

Few stronger illustrations of the importance of material in the execution of a design can be given than that afforded by the Colten residence here,—a simple, elegant mansion, perhaps a little more Italian than Inigo Jones ever built, but still of that type,—a design that, if executed in marble, could have been eminently satisfactory, but the meanness of boarding and white paint is not to be overcome. The whole thing becomes a cheap scenic representation,—a sham and a disappointment,—in spite of good proportion and excellent detail. The house is not new, having been built some twenty years ago, when half-a-dozen railroad millionaires simultaneously erected big houses in the locality, since known as "Nob-hill." These big houses are of various designs, and none, with the exception of this Colten house, worth a moment's consideration; though in them have, by this time, been gathered many important works of art, together with much expensive rubbish. Now and then, with the object of raising money for some charitable purpose, the private collections of San Franciscans are exhibited, and it is encouraging to know that there is a constantly increasing number of good pictures and other beautiful things that have come to stay, and must exert a constant influence, attracting more, till some day it may not seem unmanly to be sensitive and discriminating.



Angle of Town Residence, San Francisco. (First story, brick; second, wood; porch, marble.)

NOTES.

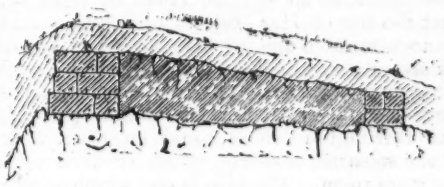
IT seems rather singular that at the annual demonstration of the Durham miners, which took place last Saturday, not a word was said on the eight hours' question. Many kindred subjects were dealt with in the resolutions submitted from the various platforms, but this particular one,—which we should have supposed to be peculiarly a miners' question,—was conspicuous by its absence. In the neighbouring county of Northumberland it has just been very prominent in connexion with another wages dispute which has arisen in the engineering and shipbuilding trades. At Newcastle last week the men's representatives met a proposed reduction in wages with an offer to accept a reduction of 2½ per cent. "on condition that the employer granted an eight hours' working day, or forty-eight hours per week." This being refused, they subsequently offered to accept a 5 per cent. reduction,—still subject to the same condition; but no settlement could be arrived at on this basis. Many of those most directly affected by this question are disinclined to look upon it as one to be settled by legislation,—especially in the North,—and this may account for the Durham miners omitting it from their programme. In passing a resolution with respect to the recent strike, the hope was expressed that, in the future, "some more reasonable, more peaceful, and less expensive mode of settlement will be resorted to." Mr. J. H. Wilson, M.P., told them that the only way to avoid strikes was by a solid combination of all unionists. The idea of thus being in a position to dictate at pleasure both to employers and to other trades may commend itself to union officials, as pointing to a one-sided settlement of all disputes; but, in the absence of moderate and reasonable counsels, strikes will never be abolished, as they seem to anticipate, simply by the formation of a gigantic federation.

WHO are the persons to blame for the railway disaster near Melton Mowbray is a point which has yet to be cleared up at the inquest and the Board of Trade inquiry into the matter, but the mere perusal of the facts as reported in the daily papers shows that this was one of that class of railway butcheries which it is a mere misuse of language to call "accidents." It is a disaster the contemplation of which is rendered doubly painful by the reflection that it need never have happened at all. Either the rails were left in a state dangerous for any but slow and cautious traffic, without due information being given to the driver, or the latter must have neglected the intimation and proceeded without proper caution. At present there is no evidence forthcoming to show where the blame lay. The probabilities are in favour of the engine-driver, who in such a case carries his own life in his hand as well as the lives of the passengers, and who is likely to have both more observation and a higher feeling of responsibility than is to be found among a gang of platelayers who can only endanger other people's lives and not their own. But whichever way the negligence lies, we have no doubt that this so-called "accident" is the result of culpable negligence on the part of some one, and we hope the blame will be brought home to the right quarter. There are railway disasters which really belong to the chapter of accidents, but this was not one of them.

MAJOR FLOWER, the Sanitary Engineer to the Lea Conservancy, has addressed a circular letter to the sanitary authorities in the Lea watershed, pointing out to them the importance, in view of the possible or probable importation of Asiatic cholera, of preventing any pollution of the water supply, and asking to be informed of any contamination which may come under their notice. Major Flower requests the sanitary authorities also to see to the abatement of nuisances, such as offensive manure-heaps, overflows from cesspools, privies, &c., which may contribute to the fouling of the river Lea and its tributaries. It is to be hoped this timely warning and advice will receive due attention.

NO one who read the account of the burning of St. John's could have any doubt as to the cause of the disaster; timber architecture, a dry hot wind, absence of water owing to some work being done on the water communication, and the sudden and apparently accidental breaking out of a fire under these untoward conditions. But the question it is not so easy to answer is,—why has St. John's been burned twice within fifty years? The conflagration of a whole town is not a common occurrence; that it should have happened twice to one city in less than half a century shows that something is radically wrong in the manner of building or in the provision for fire-extinguishing, or both; and before St. John's is rebuilt the local authorities had better set themselves to find out what has been wrong in the past, and avoid it in the future.

A CORRESPONDENT in Rome writes that some fragments of a great wall, constructed of peperino stone, were lately come upon in the course of excavations for a road on the slope of Monte Gentile, near Ariccia. The wall was 1·25 mètres thick, and at the distance of 9 mètres from this wall another was found nearly 2½ mètres thick of similar blocks. Between the walls was an artificial platform of tufa rock; the whole as shown in the accompanying section.



Some hasty excavations made in other parts of the hill brought to light several fragments of the same wall, apparently an ancient fortification of an Etruscan city. From the same correspondent we learn that at a spot called Quarto de Montebello, outside the Porto del Popolo, Signor Piacentini has found some ancient chambers, probably of *thermæ*, in which are some mosaic floors of interesting character and in fair preservation. The remains of the masonry appear to belong to the second century A.D. with some traces of later work. The mosaics include one formed with square tesseræ of white, black and red marble, arranged in a geometrical pattern imitating a mat; a second somewhat similar one with large octagons at the angles; a third with block ornaments on a white ground and some figures of winged genii and birds; one or two others with simple geometrical patterns, another ornamented with flowers and birds, and lastly one with a somewhat elaborate centre-piece representing a sacrifice, and formed with tesseræ of brilliant colours,—ruby, emerald, turquoise, &c. Terra-cotta pipes, forming a portion of the apparatus of a hypocaust, were found on the site.

AS the suburbs of Vienna are now to form officially a portion of the city, of the "Gros Wien" of the future, there seems to be a laudable desire on the part of the city authorities to carry out improvements on a definite system, and to plan out all the future street improvements before taking the work in hand, so that every improvement may be part of a scheme considered and settled beforehand. This is what ought to have been done long ago in London. The Vienna authorities also propose to take in hand the regulation of the Danube Canal and of the river Wien which passes through the capital, and to extend the drainage system. They have opened an International Competition for obtaining proposals for their scheme as a whole, or for parts of it, and offered a number

of premiums and a very well-defined programme of requirements. The competition will not be decided till about a year from now. Whilst Vienna is engaged on these extensive schemes of improvement it would be well if immediate attention were given to some more everyday matters, such as the uncleansed roadways and the smells that arise from the sewer grids. The boulevards with their imposing architectural monuments give the casual visitor a favourable impression of Vienna; if he enter the city proper or the suburbs he will see a very different picture, and on inquiry he will find that the contrast is due to Government control on one side and municipal management on the other. The Municipal Board of Works of Vienna is an enlightened and active body; it is the "Common Council" (a body notorious for its political and personal factiousness) which stands in the way of improvements.

THE result of the proposal for a new cathedral at Berlin will be, it seems, a systematic inquiry into the acoustic qualities of about 200 churches in Germany. Professor Raschdorff's design for the cathedral has been criticised as impracticable for actual use as a church, and he has apparently set on foot this investigation into the acoustic qualities of existing churches by way of obtaining practical material for rebutting the criticism. Professor Helmholtz has been invited, among others, to give a scientific opinion on the subject.

A SUGGESTION was made by Mr. Sclater, in a letter to the *Times* of Monday, that the site of Her Majesty's Theatre would be an admirable one for the erection of a new "Palais des Beaux-Arts" in which the Royal Academy could be better housed and have more space for its exhibitions than at present, and Burlington House could be given over to the scientific societies, which are clamorous for more room. The idea is one which would have been well worth consideration if made earlier—which is well worth consideration now, in fact; but we fear it comes too late. If the site has been taken up for a hotel speculation, it will never be got hold of for anything better now. It is a thousand pities that it should be so, but hotel building seems to be a kind of craze at present, though it is difficult to understand how all these monster hotels can pay; and architecturally the result is always the same, viz., a mass of building with the most commonplace details put together without anything that can be called design, and hurried up by night and day labour in order to get the earliest possible return for the outlay. The site of Her Majesty's Theatre might certainly have been turned to a better purpose than that.

IT is proposed to commemorate the hundredth anniversary of Shelley's birth by the establishment of a "Shelley Library and Museum" at Horsham, from which Fieldplace, where he was born, is two miles distant. In his "Life" of the poet (1886) Professor Dowden describes the house where he was at school under Dr. Greenlaw, during the interval 1802-5. That house is still standing—at least, was standing eighteen months ago—under the name of "Syon Park House," about midway between Isleworth and Brentford railway-stations, but shorn of the schoolroom which lay against the front of the house, abutting on the road. Here Captain Medwin, another biographer (1847), was Shelley's school-fellow. He married Mary Godwin, in St. Mildred's, Bread-street (as we read in Mr. Hutton's "Literary Landmarks of London"), a church which seems to have been frequently chosen for weddings in respect of which publicity was not sought. At that time Mary Godwin lived in the Polygon, Somers Town, recently pulled down, and her husband had lodgings at, we believe, No. 23, Chapel-street, leading from South Audley-street to Park-lane, re-named Aldford-street four years ago. The monument exhibited this year by Mr. E. Onslow Ford, A.R.A., at the Royal Academy, is presented to University College, Oxford, by Lady Shelley, widow of the poet's son.

A PROPOS to another centenary about to be celebrated,—that of the discovery of the New World,—it may not be amiss to mention here that Bartholomew, brother of Christopher Columbus, was a map-maker in London, in 1489-90; and that Ferdinand, son and biographer of the great admiral, came, as we are told, to England for Charles V., and his catalogue of books, maps, and plans, bought by him during his travels, has been preserved in the cathedral library of Seville, to which he bequeathed his own large collection. An entry in the list records his purchase of a map of London, engraved on copper, and dated 1497. That a copy of the map will be forthcoming can scarcely be expected now: so far, the earliest known view of London, as a whole, is the drawing by Van den Wyngaerde, the Dutchman, bequeathed by Mrs. Sutherland to the Bodleian. It is undated; but some other drawings by him of various buildings in and around the town are signed, and dated 1558. The view has been copied (and engraved) to smaller scale by Whittock, who however introduced details unwarranted by the original: and its re-production formed the first publication of what seems now to be the defunct Topographical Society of London.

THE Commissioners of Woods and Forests have just cleared a building-site of about 8,300 ft. superficial by demolishing Lane's Hotel with other property in Norris-street and St. Alban's-place (behind the Haymarket, western side), where formerly stood St. James's-market. One entire block of the market yet remains; a portion was removed for Nash's improvements under the Act 53 Geo. III., c. 120. Henry Jermyn, Earl of St. Alban's, built it in 1666, as we learn from Pepys's diary, April 1 of that year. It formed the chief market for meat and poultry for the west of London when Swift had lodgings (1710) in St. Alban's-street, now represented by Carlton-street, leading into St. Alban's-place, marked by the Tuscan colonnade. Market-street leads southwards out of Jermyn-street. St. James's fair, which appears to have enjoyed a reputation no less notorious than that of May fair itself, was removed to the market-place from the vicinity of St. James's Palace in 1665. At the St. Alban's tavern, by the market, was founded the Roxburgh club, by T. F. Dibdin, after the sale of the Duke's collection at 11 (now 13), St. James's-square, in May and June, 1812.

THE exhibition of student work in connexion with the National Competition of Schools of Arts has been held this week at the South Kensington Museum. The collection of drawings of various kinds is a large one, and a great many are of high average in merit. Amongst the architectural drawings are designs for a church by James H. Tonge, wrought-iron gates and grille by Herbert S. Pepper (who also sends two examples of signs to be executed in iron and copper), and a newel and balustrade by Benjamin J. Fletcher. Two sets of measured drawings of the old window forming the front of Paul Pindar's house in Bishopsgate-street, now pulled down and set up in the Museum, are carefully finished in outline, with the shadows given in wash, and Alfred Palmer sends a good set of measured drawings of a late pulpit at St. Elizabeth's Church, Scarisbrick, Lancashire. Amongst others are the font in Winchester Cathedral (Ernest W. Light); north door, S. Maclou, Rouen (Benjamin J. Fletcher); wood screen, Warfield, Berks (W. H. J. Allen); and some careful drawings of old crosses and chapels in the Isle of Man, which should be interesting to archæologists. The number of drawings of Decorative work of various kinds is very large, designs for textile mosaics, tiles, and wall-papers forming a long series. A design for silk and gold (Miss Mohun), for tiles (Miss Robb), for damask (Miss Caldwell), and mosaic (Miss Roots), the latter a very good piece of design and drawing, are some of the best that we noticed. There are besides a large number of drawings of flowers and still life, and the usual examples taken from the antique.

THE *Edinburgh Review* for July contains an article on "Formal and Landscape Gardening," being a review of books by Mr. Milner, Mr. Blomfield, and the late Mr. Sedding. The subject is treated from the architect's not from the gardener's point of view. The reviewer, while sympathising with the revived taste for the formal garden, deprecates anything like a mere archæological revival, concluding with the observation that "if the revival of formal gardening is undertaken merely as a fashion, the arbitrary adoption of the taste of a former period, it can have no other fate than has attended the revival of Gothic architecture,—to be pursued until all the copying has been done that could be done, and then to be abandoned in favour of another fashion, leaving only a collection of sham eighteenth-century gardens as its record." The *Edinburgh* is severe in its criticisms of the tricks of effect of the landscape-gardener.

THE ROYAL COMMISSION ON METROPOLITAN WATER SUPPLY.*

AT its later sittings the Commission has entered upon a new field of inquiry,—the claims of the communities in the valleys of the Thames, the Lea, and the Colne to retain their local water supplies for their own increasing populations. The Chairman, however, has been very careful not to overstep the limits of the reference to the Commission, and has declined to allow statements to be printed which went beyond those limits in suggesting that water authorities should be created for certain areas. Buckinghamshire, Surrey, Essex, Middlesex, and Hertfordshire have been heard by their representatives in assertion of their claims to what they regard as their own water. The Conservancies of the Thames and the Lea have been heard again in reference to the alleged pollution of those rivers, and have given the results of their own independent examinations with the object of modifying the conclusions to be drawn from the reports of Drs. Ashby, Fosbroke, and Turner made on behalf of the London County Council.

On the question of storage by reservoirs in the river valleys—its geological possibility, utility, and expediency—there is some engineering as well as medical and chemical evidence; but the subject has only been mentioned incidentally, being reserved as part of the question of future supply.

We continue our summary of the statement made by Dr. Frankland, the Water Examiner:—

The pollution of the Lea and its tributaries is similar in character to that of the Thames, but considerably less intense. The intake of the New River Company is 22 miles above that of the East London Company, and between the two intakes the river receives a good deal of polluting matter, including the treated sewage of Hertford. When the Lea is not in flood, the water at the New River intake differs little chemically from the spring and deep well water obtained from the chalk; but microbes are much more numerous than in spring water. The New River Company, therefore, often delivers water scarcely inferior chemically to spring water. At the intake the water taken for examination has always been turbid, but, efficiently filtered, it has been delivered apparently free from suspended matter, but showing optically an enormous number of suspended particles. Analyses of 1891 of water at the intake show an improvement of 60 per cent., and 32 per cent. over one sample taken in mid-winter in 1873. In six weeks microbes varied from 71,865 to 226,484, and averaged 134,956 per cubic inch. Owing to insufficient storage, the company is compelled to deliver flood water, and samples taken in February and March, 1891, contained thrice the

* See last volume of the *Builder*, pp. 418, 435, 456, 480, 503; and current volume, pp. 10, 29, 47, 71.

usual amount of organic matter. In six weeks ending April 17, the improvement averaged 20 per cent. The water delivered, although variable, is on the average superior to that of any other company drawing from rivers. The open conduit bringing the water,—river, spring, and deep well,—to London, originally forty miles in length, has been shortened by various cuts. It is protected from polluting streams, but in many places cattle have free access to the banks. In several places the conduit freely communicates with ornamental waters in the grounds of private residences; it passes through villages, parks, and gardens, and sometimes skirts high roads. "I have never" (the witness said) "seen elsewhere water for dietetic purposes conveyed through cultivated and inhabited districts in such a manner. This open conduit should be replaced by 'cut and cover,' or iron mains such as are used everywhere else for this purpose." By the time the East London intake is reached, the sewage effluent of Hertford and other places raises the organic impurity by an average of 141 per cent., and the microbes by 40 per cent., the numbers varying from 337,364 to 53,103, and averaging 189,403 per cubic inch. In respect of microbes this is considerably better than the Thames at Hampton. The waters improved 40 per cent. in respect of lifeless organic impurity, and 98·3 per cent. in respect of living impurity. In the water delivered the microbes varied from 7,216 to 1,246, and averaged 3,165 per cubic inch. The storage capacity equals 14½ days' consumption,—more than that of any other company except the Chelsea. The defects in the Lea supply are essentially the same as those of the Thames, and therefore it was not a suitable source for drinking water, but its abandonment is not so urgently required, as its pollution is less. The hardness of the water is slightly greater than that of the Thames.

In a long examination, Dr. Frankland said that our present knowledge of micro-organisms was incomplete and contradictory, and investigations were in progress, the results of which it was hoped would be communicated to the Commission at a later date, whilst another year was likely to produce much detailed information from many observers. It was a recent discovery that filtration would remove 98 per cent. of micro-organisms, and if he had had our present knowledge in 1874 the terms of the Report of the Rivers Pollution Commission would have been less severe. He had been astonished to get only from 4 to 24 microbe germs instead of hundreds in a cubic centimètre of water; but still this was only one of a series of experiments that were to be continued for months. A single germ passing through a filter might multiply into millions, but in four germs you were not likely to have a pathogenic germ. He had not attempted to distinguish between pathogenic and harmless germs, because even Dr. Klein had failed to find any pathogenic germs in London water. There was probably no instance of a river water that had been stored and filtered communicating disease, but cholera poison, put into the Don at Sheffield, had been carried to Doncaster. Practically, typhoid and cholera are the only two diseases that had been proved to be communicable by water, and cholera bacillus was soon destroyed by competing microbes; but if there were cholera in the upper reaches of the Thames, it would be unwise to drink Thames water. The Tame was so badly polluted that it was found in actual putrefaction, and, therefore, there would be a strong probability that in the Tame the cholera bacillus would be destroyed by other microbes; in other words, as a Commissioner remarked, the worse the river the less danger of disease. Then, the greater the dilution the less the risk of typhoid fever. A Commissioner calculated that in the valley of the Lea there would be one case of typhoid in a body of water that would measure three miles in length, two miles in width, and 6 ft. in depth; and in that case the witness admitted that the risk would be reduced to zero.

Mr. W. J. Dibdin, Chemist to the London County Council, submitted the results of many analyses and microscopical examinations. The outcome of them is that in dry weather the supplies of the companies drawing from the rivers are fairly good, but in storm periods the organic matters are largely increased, and the variations at the intakes are reproduced in the water supplied. The first flush of storm water does not carry away all impurities, and some time elapses before a river returns to its normal dry-weather condition. Therefore, storage reservoirs, if provided, would have to be charged with foul water. Further abstractions from the dry-weather flow of the rivers would interfere with the proper flushing of the lower reaches.

From the later evidence we select some items of direct engineering interest:—

The Kent Company's Wells.

Mr. Wm. Morris, of the Kent Company, handed in returns of the average depth of the water from the surface of the ground in the Company's wells for a maximum supply period of thirteen weeks (ending July 9, 1892), for a maximum supply period of six months (ending June 30, 1892), and for a maximum supply period of twelve months (ending December 31, 1891). The average daily supplies were:—

For the 13 weeks	14,213,000	gallons.
,, 6 months ...	13,772,000	,,
,, 12 ,, ...	13,534,000	,,

The depths for the year were as follow:—

	Depth of water. When pumping. ft.		When at rest. ft. in.	
Deptford: New well ...	74	...	21 5	daily
,, Garden well	68	...	20 1	daily
,, Bath well ...	66	...	19 5	occasionally
Plumstead.....	107	...	78 0	daily
Crayford: No. 1	—	...	—	occasionally
,, No. 2	25	...	—	occasionally
,, No. 3	33	...	—	—
Shortlands: No. 1	31	...	—	daily
,, No. 2	31	...	—	continuously
Orpington: No. 1	79	...	—	daily
,, No. 2	80	...	—	continuously
Wilmington	46	...	7 0	daily

Mr. Morris also supplied a one-inch map, upon which were marked the positions of all the wells, and also a section of the valley of the Ravensbourne showing the stratification at each of the wells, the line of saturation, and the depth of the bore-holes. They found, he said, that when they ceased pumping, the water in the wells came back to its old level. The wells at Deptford were working by day only. Pumping pulled them down to the levels stated; when pumping ceased they came back to about Ordnance datum. They had varied a little; the more water was pumped, the lower they went; when pumping stopped they came up again. There was some communication between the wells at Deptford, and the other day the level of the Garden well fell 2 ft. from pumping at the Bath well. They are about 200 yards apart. The other wells have no effect on each other. The Orpington well is a long way from the river; it overflows gravel-pits close to the pump, and adjoining wells which go down to the lower water-line indicate a range of 40 ft. variation in the level of the water. In all probability the quantity of water supplied would be higher this year than it was last. As to the depth of water in the wells, something depended upon the rainfall. Last year there was a favourable rainfall, and in the autumn the water stood higher in some of the wells than it had done before.

The New River Company's Wells.

Mr. Joseph Francis, of the New River Company, recalled, handed in a return of the average daily discharge of Chadwell Spring for each week of 1889, 1890, 1891, and 1892 up to March. The daily average for 1889 was 3,618,000 gallons; for 1890, 2,412,000; for 1891, 2,001,000. In four weeks of September and October, 1891, the discharge was under 500,000 gallons a day. The low averages for 1890 and 1891 are attributed to the remarkable scantiness of the rainfall during the six months preceding the summer. It had been erroneously inferred from evidence taken in 1867 that the daily flow averaged 4,500,000 gallons for a year. It now appeared that that average was reached only in some of the weeks of the early months of 1889, while in the autumn the flow fell as low as 720,000 gallons, and in the last six months of the year only one week rose above 3,000,000 gallons. The spring answered somewhat quickly to a period of drought. If there were a series of wet years, the average would probably rise again to 4,500,000. The facts raised the presumption that, as a permanent source of supply, the spring was not much more, if any more, reliable than the flow of an ordinary stream; and, therefore, in the return of water that could be relied upon he had put it down at a low figure,—about three-quarters of a million,—the lowest that it had been for any length of time. The interval that occurred between a wet season and the rising of the volume was variable. In very dry months a large rainfall did not affect the well at all. If the rain came in the winter, when the ground was saturated, then the spring got the full benefit of it. The pumping at Broadmead well, or any other of the Company's wells, had no effect on the Chadwell spring.

Mr. Francis produced a section coloured to show the strata at the wells, the levels of the water under ordinary working, and the levels to which it rises when the pumps are not working. Asked whether there had been any permanent lowering of the last-named level, he said there had been some in the wells nearer to London. We knew that under London the water had been falling at the rate of about 18 in. a-year for many years. At Betstile and Campsbourne the water did not appear to return to the river Lea level, and there were records indicating that the water at Betstile well had stood higher than it did now.

The East London Company's Well.

Mr. W. B. Bryan, of the East London Company, produced a one-inch map showing the relative positions of the Company's wells and rain gauges, geological strata, Ordnance datum, and the levels at which the water stands in the wells when they are not being pumped from. Asked whether the level of the Lea Bridge well had ever sunk, he said,—No. Whilst pumping was going on the headings had to be kept dry. When pumping ceased the water rose rapidly within a few feet of the indicated level, and the last few feet it rose very slowly. There was no record of the permanent sinking of the level of any of the wells, because they were now in process of construction. The Waltham Abbey well was the one that had been pumped the longest for five years. The pumps were drowned, and had been since the water was let in upon them, and the water rose to the height indicated when pumping stopped for ten hours. The rest level was just where it was when they began, as nearly as they could tell.

Wells alleged to be affected.

Mr. T. S. Tilley, well-engineer, of Walbrook, City, said he had acted on behalf of the Enfield Local Board in sinking wells; and he had gained knowledge as to the following wells, the water-levels of which were sinking:—

The Waltham and Cheshunt Gas Company's Well, close to Waltham station on the G. E. railway, bored in the chalk, 85 ft. In 1880 the water flowed 1 ft over the surface. In 1892 the water level when at rest has decreased to 18 ft. from surface.

Well at "The Cedars" (Mr. S. Warren's), Theobald's-square, Theobald's-park, Cheshunt, about 300 yards west of the main road. Bored in the chalk 114 ft.; water line, 1890, 19 ft from surface; 1892, water line when at rest, 22 ft. 10 in. from surface.

The Edmonton Union Well, Union-lane, Edmonton, about half a mile west of the high road from London. Bored in chalk, 165 ft.; water line, 1880, 25 ft. from surface; 1892, water line 63 ft. from surface.

The Enfield Local Board Well, close to Ponder's End station on the Great Eastern Railway, is sunk to about 100 ft. in the chalk; a heading is 100 ft. long in the chalk, and a boring is continued a further depth of 100 ft. This well in the night or early morning yielded from 80 to 100 gallons per minute more than in the daytime.

Well at Royal Small Arms Factory, Enfield Lock. Water level, 1883, 3 ft. 6 in. from surface; 1892, 19 ft. from surface. The water supply is from the chalk.

The following wells appeared to be affected by the pumping of the Water Companies:—

The Waltham & Cheshunt Gas Company's Well.—The nearest pumping well, drawing a large supply, is that of the East London Waterworks Company, about three-quarters of a mile south-east.

The Cedars Well.—As to this, the witness said he could only surmise that this is affected by the large wells of the New River and East London Companies to the east and west.

The Edmonton Union Well.—As to this well, the nearest pumping well drawing a large supply is the New River well at Highfield-row, Winchmore-hill. This well is about one and a-quarter miles W.N.W.

Slip and Short Stroke in Pumping.

It will be remembered that when Mr. Binnie, the Chief Engineer to the London County Council, was before the Commission, he spoke strongly of the fact that the Companies' returns of water supplied had not made allowance for slip and short stroke in the engines. Mr. Restler, of the Southwark and Vauxhall Company, was examined on this question on being recalled to hand in some information that had been asked for previously. One return showed the maximum daily supply for any seven days, any month, any three months. September, 1891, furnished the week and the month, and the quarter was the three months ending October, 1891. The respective quantities, deducting 10 per cent. for slip, short stroke, &c., were 26,301,700, 25,473,451, and 24,902,729 gallons.

In answer to the Chairman, the witness said the deduction of 10 per cent. was not in conformity with the returns made to the Water Examiner, to whom the gross quantities were always returned. The Company had made some careful experiments in order to ascertain what the deduction ought to be. They had an automatic arrangement which they had attached to the engines, of the direct-acting type, and they found in some cases that the actual loss due to variation in the length of stroke amounts to 9 33 per cent. To this had to be added the slip of the valves, and the water used for sand washing and for the supply of the condensers. Some of the experiments were made in 1856 and 1858, and some in the present year. The attention of General Scott and of the late Sir Francis Bolton was called to the fact that the Companies were returning the gross quantities. At the time of the Health Exhibition Conferences, in the presence of the engineers of the Water Companies, the subject was specially discussed, and it was thought advisable to continue the returns as they were, for the sake of comparison.

The Chairman: One can easily understand that as arising from the desire to make the long series of returns comparable the one with the other.

Natural Filtration in Gravel Beds.

The value of the natural filtration supply of the Southwark and Vauxhall Company was the main subject of a further examination of Mr. J. W. Restler, C.E., the Company's engineer. Mr. Restler produced detailed analyses by Dr. C. Meymott Tidy. First, there were twenty-four samples of water from the gravel, and, for comparison, an average of thirteen from forty-three samples of Thames water. The twenty-four samples were taken from July 18 to October 5, 1889; the thirteen from December, 1889, to December, 1890. Mr. Tidy wrote of the twenty-four samples "that they were all perfectly clear and bright; that they had all a neutral reaction; that they presented great uniformity of composition; that I consider all the samples good, wholesome, and of excellent quality." Again, writing on July 7, 1890, of gravel waters he said:—"Herewith analyses of samples to June 15. All the waters are of most excellent quality,—good, pure, and wholesome." The following are some of the results of the analyses:—

	Gravel.	Thames.
Total solid matter, grains	20·24	20·16
Ammonia	None.	None.
Nitrogen in nitrates and nitrites, grains	0·089	0·115
Oxygen required	0·038	0·033
Organic carbon, part per 100,000	0·109	0·116
Organic nitrogen per 100,000	0·033	0·034
Lime (CaO)	8·31	8·18
Chlorine	1·149	1·224
Hardness before boiling	14·5	13·9

In answer to the Chairman, Mr. Restler said the samples of water from the gravel were taken by one of the Company's inspectors from the pump-wells of the engines that were lifting the water. Dr. Tidy was supplied with a sample daily, Sundays excepted, from July 18 to October 15, and the witness did not know on what principle the twenty-four had been selected. There was no request that each sample should be analysed, and it was presumed that those analysed were representative. The comparison of these natural filtration waters was with filtered Thames water.

Professor Dewar: And the general result is to substantiate the statement made that there is no practical difference between the filtered Thames water as it is supplied to London and the artificial water that you were testing?

Witness: No; that was the point that the directors desired to be very clearly informed upon.

There is no difference beyond a very small addition in the case of the chlorines?

Yes, that is so. The gravel water, added the witness, was not supplied to the public without subsequent filtration. It was thought it might have been a substitute for artificially-filtered water, but an opinion was expressed by the Water Examiner that it ought to be passed through a known thickness of previously-prepared material, and the Directors then said they would not raise the point at all, but they would proceed with the extension of their filters and pass all water through them, whether it came from the gravel or not. This decision was taken subsequently to the reports of Dr. Tidy. The quantity of water taken from the gravel was slightly reduced, because it had been necessary to construct a puddle-wall which had cut off a proportion of the spring water, and there was a large proportion of Thames water now admitted which had to be filtered in the ground, and when it was brought in had to be left there. In time that would accumulate, and then it would be necessary to either wash the material surrounding the flow-pipes or to change their position. At present the diminution was something like 10 per cent. The works on the island were not affected by the puddle-wall, and were yielding as much water as before. The water obtained from the island was the least satisfactory, because at times, and when the pumping was rapid, a sort of red sandy material came through with the water. It was mainly on that account it was decided to pass all the water through filters.

In reply to Mr. Mansergh, the witness said that the samples analysed included water passed from the Thames as well water from the gravel. The beds gave from 5,000,000 to 6,000,000 gallons a day, and from 3,000,000 to 4,000,000 gallons came from the gravel. Asked to show the exact area of the gravel bed, he said he could not show the southern boundary, because the bed passed under the river. There was no doubt of that because there was a considerable difference in the thickness of the ballast between the river bed and the surface of the clay. The outcrop of the clay extended under the works of the Chelsea and Lambeth Companies, who also availed themselves of this natural filtration.

Mr. Mansergh: We want to know, as nearly as we can, whether it is really natural water, or whether it is water taken from the Thames and subsequently filtred?

Witness: Of course that can easily be proved by shutting off the river intake and continuing the pumping.

Do you filter the water you take from the ground as slowly as you filter the water taken from the Thames?

Witness: It is all pumped in together, and we make no difference.

Sir A. Geikie: Have you made any observations as to the relation between the rainfall and the variations in the quantity of water you can pump from the gravel beds?

Witness: We have not made such observations.

Have you noticed any such relation?

Well, not so much in the rainfall; but with the variation of the level of the river there is a marked difference. Directly the level of the river approaches the level of the ground, we can pump practically any quantity of water we require from it without affecting the level at all; in fact, we have at times pumped from 15,000,000 to 16,000,000 gallons a day, and still been unable to materially diminish the water we could obtain.

Of course, that is just in another way an answer to my question—the level of the river depends upon the rainfall?

Witness: Yes.

And any variation in the level of the river would produce a corresponding variation in the quantity of water you can pump?

Yes. I rather think that when the level of the river gets at all high it gets above the portion of the bank that is sealed. The river there has a covering of a sort of clay deposit, which is practically equal to a puddle, and as soon as the river gets above that and really floods the ballast, then, I fancy, the water-supply is increased to us.

This concluded the examination of this witness.

The Commission sat on Monday, and heard Mr. Mullens, of Bromley; the Secretary and Inspector of the Thames Conservancy; Mr. Littler, Q.C., Chairman of the County Council of Middlesex; Mr. Kittering, of Enfield; Mr. Tilley, well engineer; and Mr. Merser, formerly a millowner on a stream near Uxbridge, who said the Colne was diminishing in volume.

On Tuesday was heard the case of the Hertfordshire County Council; and the Commission has now adjourned for the long summer vacation.

THE ARCHITECTURAL ASSOCIATION.

A SPECIAL general meeting of this Association was held on the 22nd inst. at 9, Conduit-street, Regent-street, W., to consider the resolutions printed in the following requisition:—

"To the Hon. Secs., Architectural Association:—

Under the terms of By-law 43 we hereby require you to call a Special General Meeting of Members to consider the following resolutions:—

1. 'That the Committee having declared that one of the names placed on the voting lists recently issued was improperly so placed,—the gentleman having resigned his membership,—the Committee alone are responsible for the error, as no public notice whatever is taken of resignations during the session, and therefore the general body of Members does not know who has resigned.'

2. 'That the number of votes given to this gentleman (now declared to be lost) would have been distributed among the other candidates, and that, therefore, the declared result of the voting is most unsatisfactory and misleading, if not actually invalid.'

3. 'That this meeting, therefore, directs the secretaries to issue proper and correct voting papers, to secure their proper counting, and to have the result duly declared as the election of Committee and officers for session 1892-3.'"

The requisition was signed by Messrs. C. H. Brodie, Walter Dewes, A. F. Cutler, Chas. H. Freeman, Percy E. Newton, Sydney Tugwell, Edwd. Greenop, Percy D. Smith, Thos. Edward Pryce, John Todd, J. Stransom, G. A. Lansdown, Sydney B. Beale, Walter Millard, and J. W. Stonhold.

The proceedings were opened by Mr. C. H. Brodie, who proposed the appointment of Mr. H. O. Cresswell as chairman. Mr. Sydney B. Beale seconded. This having been agreed to,

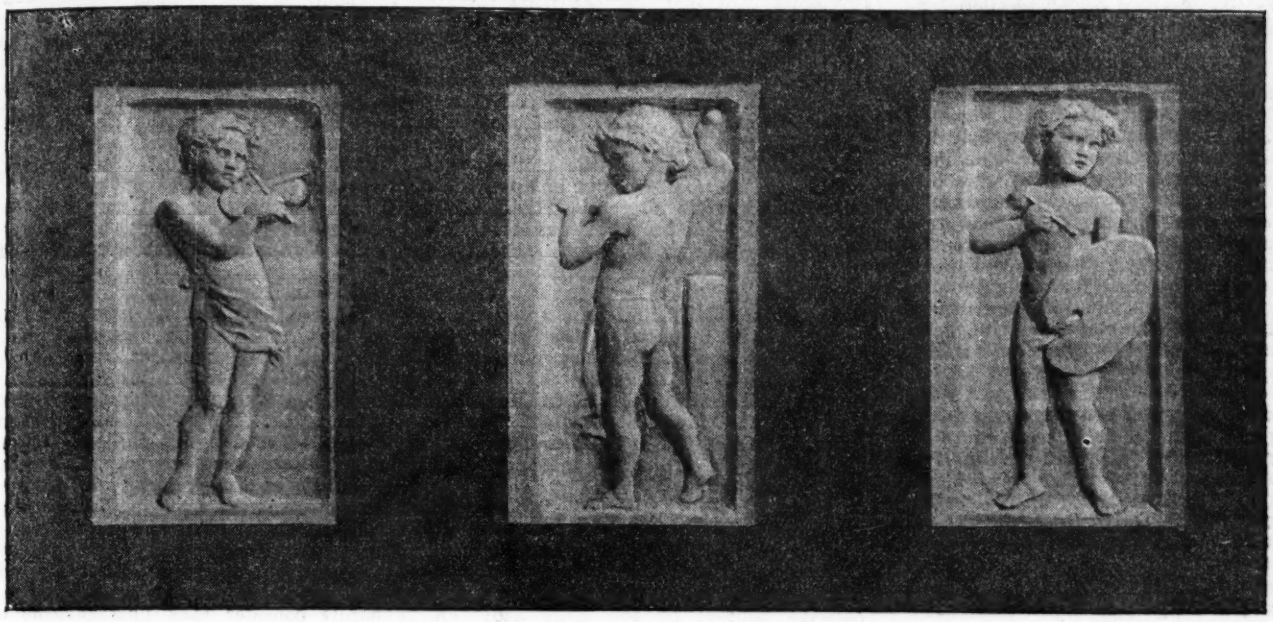
Mr. E. S. Gale, senior honorary secretary, read the requisition which we print above, and the By-law referred to in it.

The Chairman said that it might be desirable at that stage of the proceedings to ask the Secretary to read a statement of the facts of the case which had been drawn up by the Committee and submitted to counsel, and also the opinion of counsel upon that statement. Certain gentlemen who had signed the requisition had attended before the Committee, and had expressed the desire that counsel's opinion should be obtained, and in deference to that desire the Committee had obtained that opinion.

Mr. E. S. Gale then read the statement which was submitted to counsel, in which it was mentioned that after the list of gentlemen nominated to serve as officers for session 1892-3 had been posted to members, it was discovered that Mr. Gerald C. Horsley's name had no right to be on the list, as he had resigned his membership of the Association. The Committee decided that as Mr. Horsley was not a member at the time of nomination, he was ineligible for election, and consequently any votes given for him would be lost. As it was, enough votes were not given to Mr. Horsley to secure his election, but it was said that the fact of Mr. Horsley's name being on the list made the election null and void, as the votes given to Mr. Horsley were wasted.

The opinion of Mr. Frederick Laing, barrister, was then read, in which he gave it as his view that the election was a good and valid one, and could not be set aside and declared void.

Mr. Brodie said that it was quite true that he and others did express the wish that counsel's opinion should be taken, but they also expressed the wish that the statement to be submitted to counsel should also be submitted to the scrutineers, and should be approved by them. To put it mildly, a very strong "lead" had been given in that statement of facts. He hoped the meeting would support him in his desire that the whole of the report of the scrutineers should be read, for it was almost necessary to know the number of votes recorded for Mr. Horsley before they could discuss the resolutions contained in the requisition. The whole point was, that if the votes had not been given to Mr. Horsley they would have been given to some one else, and the result of the election would have been different. He moved that the



Decorative Panels: "Music, Sculpture, Painting." Miss E. M. Rope, Sculptor.

Secretary be instructed to read the whole of the scrutineers' report.

This was seconded by Mr. Beale, and, after a long discussion, agreed to, and the report of the scrutineers was read.

Mr. Brodie then proposed the first of the resolutions printed in the requisition, and, in doing so, referred to the fact, as revealed by the report of the scrutineers, that there were five candidates within nine votes of each other. Mr. Horsley received 225 votes, and although there was such close voting, the Committee took upon themselves to rule that 225 votes had been lost. Mr. Horsley, at the time of his nomination, was present, and he and his proposers, and, in fact, everybody else, considered him to be a member of the Association. The error of allowing Mr. Horsley's name to be upon the voting-paper was entirely the Committee's, and yet they wanted to make other people suffer for their error.

Mr. Beale seconded the resolution.

Mr. H. D. Searles-Wood said he wished to propose the following amendment:—

"That the Committee having declared that one of the names placed on the voting-list recently issued was improperly so placed, this meeting is of opinion that it was properly placed, the gentleman being a member of the Association at the time."

Mr. Leonard Stokes said that at the first meeting of the present Committee at which he was present he re-stated the facts, previously stated to the old Committee, respecting Mr. Horsley's resignation, and the Committee came to the conclusion that Mr. Horsley was a member of the Association at the time of his nomination for the Committee.

Mr. Brodie said that the By-law stated that only resolutions contained in the requisition could be discussed.

Mr. Cole A. Adams said he could quite understand Mr. Brodie's unwillingness to discuss the question as to whether Mr. Horsley was a member or not at the time of his nomination. If Mr. Horsley was a member at that time then the whole difficulty was solved.

Mr. Beale said he could not agree with Mr. Adams. At the last ordinary meeting of the Association,* the President ruled that no discussion could take place as to Mr. Horsley's election, and since that time the circumstances had not altered. The meeting had met to consider the resolutions contained in the requisition, and they had to consider the case as though Mr. Horsley was not a member.

The Chairman said he would mention what steps the old Committee took to investigate the question of Mr. Horsley's membership. At the meeting of the Committee that was held after the issuing of the voting papers, the question was raised as to whether Mr. Horsley was a member or not. The Minute Book was referred to, and a letter was found from Mr. Horsley in which he resigned his membership. No other reference to the matter was found, and unfortunately Mr. Stokes at that time had resigned from the Committee, or doubtless he would have reminded them of the fact that he had been asked to see Mr. Horsley and get him to withdraw his resignation.

Mr. Cole A. Adams said the whole matter was reduced to this, there had been a misunderstanding. Mr. Horsley had sent in his resignation, and, according to the Minutes, the letter had been allowed to lie on the table. Mr. Stokes was asked to see Mr. Horsley, who agreed, to withdraw his resignation, and subsequently Mr. Horsley was asked, and agreed to stand for election on the Committee. The general impression, therefore, was that Mr. Horsley was a member, and the list of candidates containing Mr. Horsley's name was fairly voted upon. Supposing the resolution was carried, what would the result be? One result would be that they would lose an immense amount of time which was of great value to the well-being of the Association; and it seemed to him monstrous that such valuable time should be thrown away on such vexatious matters. The Committee had acted in the name of the Association, and had acted in a courteous manner to the requisitionists. Counsel's opinion had been obtained to the effect that the election was a valid one. It was not likely that counsel would be influenced in the way in which the case had been put. It would be sheer waste of time if the election were to be declared invalid, and he supported as strongly as he could the amendment proposed by Mr. Searles-Wood.

Mr. F. T. W. Goldsmith said he thought that the Committee were perfectly willing to admit that they had made a mistake in declaring that Mr. Horsley was not a member of the Association at the time of his nomination; but he thought that the meeting would agree that they acted in good faith.

Mr. Owen Fleming said that he was perfectly certain that Mr. Horsley was a member of the Association at the time of his nomination, and, although he did think the action of the past Committee was somewhat unnecessary, still he should support the amendment, as he thought there had been enough quarrelling.

Mr. E. S. Gale said that when Mr. Horsley's letter of resignation was received by the Committee, it was agreed that it should lie upon the table. No resolution was come to, but he was under the impression that the sense of the meeting was that he should deal with the resignation in the usual manner. He, therefore, wrote accepting it, but he now believed that in doing so he had made a mistake. Mr. Stokes had obtained Mr. Horsley's verbal withdrawal of his resignation, and the question then arose as to whether Mr. Stokes reported that to the Committee. Nothing appeared on the Minutes showing that he reported it, and he (Mr. Gale) had no recollection of his doing so.

Mr. Pryce said the votes given to Mr. Horsley were lost. He could not support the amendment, although he was glad that the Committee had decided that Mr. Horsley was a member of the Association.

Mr. Gale said that the Committee had decided that Mr. Horsley was still a member of the Association, because that night he had stated in writing that he wished to withdraw his resignation.

A member asked why, if Mr. Horsley received a letter from one of the Secretaries accepting his resignation, he agreed to be nominated?

Mr. Stokes said that after the receipt of Mr. Horsley's letter, he was asked to see Mr. Horsley and endeavour to get him to withdraw his resignation. Mr. Horsley, being told that the letter from the Secretary had been sent in error, agreed to withdraw his resignation, but not his letter, as he wished to protest against a certain policy pursued by the Association. He (Mr. Stokes) told the Committee this, and three members remembered the circumstance; but the rest had forgotten it.

The Chairman then put the amendment to the meeting, when 47 voted for it, to 23 against it.

The amendment, on being put as a substantive motion, was carried by 47 to 20.

A vote of thanks was then passed to the Chairman, and the meeting terminated.

* See *Builder* for June 4, 1892, p. 413.

DECORATIVE FIGURES FOR PANELS.

THE three little figures here illustrated, representing Music, Sculpture, and Painting, were modelled by Miss Ellen M. Rope, and are intended as decorative figures for panels in a mantelpiece.

ROYAL ACADEMY:

ADMISSIONS TO THE ARCHITECTURAL SCHOOL.

THE following Students have been admitted to the Architectural School of the Royal Academy, Mr. R. Phené Spiers, Master:—

Upper School.

H. P. Adams.	P. G. Newton.
C. W. Baker.	R. A. Reid.
J. Borrowman, jun.	A. Dunbar Smith.
A. W. Cleaver.	A. B. Yeates.

Lower School.

H. B. Cresswell.	A. A. Reeve.
W. H. Hazell.	H. A. Saul.
T. G. Lucas.	

THE ENGLISH IRON TRADE.—The English iron market generally remains very quiet. There is more activity, however, shown in the Glasgow warrant market, the business being chiefly in Scotch warrants. In Scotch-makers' iron there is rather more briskness, and quotations have been advanced. Manufactured iron and steel remain quiet on the whole, and tinplates are rather inactive. Shipbuilders and engineers are only moderately engaged. The coal trade is dull.—*Iron.*

INCORPORATED ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS:

ANNUAL MEETING AT BURY.

THE annual meeting of the Association of Municipal and County Engineers was held on Thursday, Friday, and Saturday, July 21, 22, and 23, at Bury, Lancashire. The meeting was held on the first day in the Council Chamber of the Town-hall, on the walls of which were displayed the drawings for the various public works in progress or in contempiation, including the premiated designs for the new Municipal Buildings, the designs for new markets and abattoirs, and the plans and sections of the new reservoir at Clough Bottom and of the proposed additional refuse destructors.

The Mayor (Councillor Ashworth) having offered the Association a very hearty welcome to Bury, spoke in terms of high praise of the ability and sound judgment of the Borough Engineer, Mr. J. Cartwright.

The retiring President (Mr. T. de Courcy Meade, of Hornsey) took the chair. There was a large attendance of members of the Association present.

The Chairman having suitably acknowledged the compliment paid to the Association by the Mayor,

The Secretary (Mr. Thos. Cole) read the annual report of the Council. It stated that since the last annual meeting in London there had been five district meetings. The meeting at Dublin opened out a new field by bringing into the Association gentlemen holding positions as County Surveyors. The Council had in consequence formed Ireland into a district. During the financial year ended April 30 last 106 new members (ninety-four ordinary and twelve Graduates) had joined the Association. Three names had been written off, and the Council expressed regret at the death of several members. The number of members at the end of the year was 503, and the balance sheet showed a balance in hand of £104. 5s. 11d. Since the last report, two examinations had been carried out, fifteen candidates out of the twenty-four who presented themselves satisfying the examiners. The next examination will be held at the Yorkshire College, Leeds, on September 30 and October 1. The Parliamentary Committee had considered various suggestions received from members of the Association with regard to amendments of the Public Health Acts; and the amendments thus formulated were communicated to the Chairman of the Police and Sanitary Committee for his consideration. The award of premiums for the two best papers read during the twelve months had been made, the first, £10, going to Mr. J. Walker, of Croydon, for his paper entitled "Some of the Public Works of Croydon," and the second, £5, to Mr. R. Godfrey, of King's Norton, for his paper on "Wayleaves and Easements." The Council had deemed it necessary to oppose the application of the Sanitary Inspectors' Association for incorporation, and the application of the Sanitary Institute for a Royal Charter, with regard to the clauses relating to examinations and granting certificates of competency to Municipal and County Engineers. Negotiations were in progress which were likely to result in a satisfactory arrangement, in which case the opposition would be withdrawn.

On the motion of the President, seconded by Mr. Broom, of St. Helens, the report was approved without discussion.

The President then presented the premiums awarded by the Council to the two gentlemen whose names are stated in the abstract of the report given above.

Mr. C. Jones (Ealing) proposed that the Honorary District Secretaries hold office until the next meetings in their respective districts, which was seconded by Mr. Brierley (Newton-in-Makerfield), and adopted.

Messrs. R. Godfrey (King's Norton), G. E. Eachus (Edmonton), E. J. Silcock (King's Lynn), and J. C. Radford (Putney) were elected Scrutineers; and Messrs. J. Parker (Hereford) and A. Creer (York) Auditors for the ensuing year.

Mr. J. T. Eayrs (West Bromwich) proposed—

"That in view of the fact that the Association now numbers over 500 members, the number of elected members on the Council ought to be increased from twelve to fifteen, and this General Meeting begs respectfully to request the Council to take such steps as may be necessary to have the Articles of Association amended in order to carry out this resolution."

He pointed out that this year three District Secretaries had been elected on the Council, thus reducing the voting power of the members by three votes during the year.

Mr. Lobley (Hanley) seconded the proposition, which was supported by Mr. Godfrey (King's Norton), Mr. Davis (Aston), and Mr. Jones (Colwyn Bay).

Mr. C. Jones opposed the motion, on the ground that it would involve an appeal to the Board of Trade to alter the Articles of Association, which had been just completed; it was also opposed by Mr. Brierley (St. Helens) and Mr. Lemon (Southampton), who said that his experience of large Councils was that they never worked satisfactorily.

On being submitted to the meeting, the proposition was adopted by a considerable majority.

The retiring President (Mr. Meade) then installed the President-elect (Mr. J. Cartwright, of Bury) in the office, and, in doing so, congratulated him upon his unanimous election to that position.

Mr. C. Jones (Ealing) proposed a vote of thanks to Mr. Meade for his able conduct of the Presidential office during the past year.

Mr. Eayrs, in seconding the vote of thanks, said that Mr. Meade's year of office would be always marked by the large accession of members and the progress made by the Association.

The vote of thanks having been accorded by acclamation,

Mr. Meade suitably acknowledged the compliment paid to him.

The President's Address.

The President then delivered his inaugural address. He commenced by saying that the Association of Municipal and County Engineers had so advanced in numbers, had made its influence so widely felt in legislation on the sanitary requirements of the day, and had so grown in the estimation of the municipalities and other governing bodies throughout the kingdom, that its importance and responsibilities increased with each succeeding year of its existence. To be elected the President of that Association was the highest compliment a municipal or county engineer could receive; for the honour conferred upon him and the borough he represented he tendered them his sincere and hearty thanks. Former Presidents of the Association, following in the steps of the President of what they were all justly proud to designate "The Parent Society," the Institution of Civil Engineers, had as a rule dwelt in their addresses upon some special points of practice with which they were immediately concerned, or some engineering feat of skill that was occupying the attention of the country at the time. If he did not follow on the orthodox lines, it was not for lack of matter, for, not to go outside the county in which they were met, there were at the present moment vast works of engineering skill in active operation or approaching completion that would form a record second to none the world had witnessed, and which would add much to the fame of the civil engineer during the Victorian era. To enumerate the numerous works of sewage purification and reservoir construction, and other works which many of the Lancashire towns were actually engaged in constructing, and which in the aggregate represented an enormous sum of money, would form no mean record. Passing from these, he would mention four works, each of which would form a theme in itself, viz., the Preston Docks, the Manchester water supply from Lake Thirlmere, the Manchester Ship Canal, and lastly, that magnificent undertaking, the difficulties of which had been so numerous, but which, thanks to one of their honoured members, whom he was delighted to see with them at that meeting, had been brought to a successful issue—he alluded to the impounding and conveying to Liverpool the water of the Vyrnwy. His remarks would be confined to the advantages of the Association, the relationship of the members to it and to the Authorities they served; the duties and responsibilities of a municipal engineer to the community, and the duty of the representatives and the community towards the engineers. From an experience of nearly twenty years (having joined the Association at its commencement) he could testify to the benefits to be derived from membership, not only to the members, but also through them to the Authorities they served. The reading of papers; the taking part in the discussions, in however humble a way; the listening to the opinions of those actually engaged upon the works under consideration, were of the greatest advantage to the engineer, often informing his mind on points of doubtful practice, and assisting him in a way that nothing else could so well do. It might be that the information he was anxious to obtain was not prominently to the fore at the particular time he sought it; but even if so, an observant man could always learn something at such meetings, and carry away some germ of thought to fructify in after days. It appeared to be one of the outcomes of the present day that men should bind themselves together to promote their general weal, and though he had great faith in silent thought and private research, he readily admitted that associations such as that, whose fundamental object was to obtain and distribute knowledge on points of practice, were to be commended. It might be said that engineers in past days designed and executed works of skill without such intercourse. It was said of Brindley (who, by the way, successfully carried out the construction of the Bridgewater Canal, a Lancashire work of no mean order in its day) that when puzzled and in doubt upon any point of practice, he went to bed and thought steadily for a day or two; but we should hardly consider that plan suitable to these modern days. If Brindley had belonged to such an Association as theirs he might have solved the problems that so puzzled him in a more cheerful way than lying in bed. However that might be, there was little doubt that much knowledge and experience gained in former days had been lost to us from a lack of the means of recording it. We knew that the ancient Egyptians and Assyrians had knowledge of the casting of bronzes and the removal of heavy materials, in ways of which we to this day remained ignorant. Whilst, therefore, encouraging quiet thought and study, without which it was scarcely possible to succeed, he would put in a plea for the support of their Association, which enabled its members to add to their knowledge from the experience of others, in visiting their works and hearing their views, and which, at the same time, provided the opportunity to members of submitting their own works and views to the test of those whose opinions were worth hearing. Passing to the importance of the duties and responsibilities of the sanitary engineer, he said these, if carried out aright, had a beneficial bearing upon the health and prosperity of the people. The demolition of insanitary property, the cleansing of slums, the removal of refuse from the vicinity of dwellings, the introduction of pure air into dwellings and workshops, the erection of baths and washhouses; the provision of libraries, museums, art galleries, and places of public recreation, all tended to the improvement of the community both physically and morally; and notwithstanding increased expenditure, improved pavements, new and better means of communication, improved methods of lighting, heating, and ventilating, the cheapening of the production of mechanical power, increasing the supply of fresh water, brought in their wake increased prosperity and means of happiness. To competently discharge the duties of his office, the engineer must have a suitable training. It was unnecessary to emphasise the claims of theoretical or technical instruction. The country was alive to the needs, and had met the want. At school or college, our younger men had only to desire and they gained the knowledge they sought; but the training essential to an engineer must be acquired after leaving school or college. No amount of lecturing would make the student proficient in filing and chipping; no correct knowledge of the nature of materials could be gained otherwise than by handling them. The knowledge of the component parts and arrangements of a steam engine, a boiler, a pump, a dynamo, or any other product of mechanism, was more completely acquired by one careful inspection of the article than by fifty lectures on its construction. No written description of concrete, mixing of puddle, preparation of foundations, whether in trench, tunnel, or excavation, of road-making, or of house-refuse disposal, was of half as much avail as an inspection during operation. The municipal engineer must also comprehend mind as well as matter; although the country was coming to the opinion that there was need of sanitary reform, still he would find prejudices to subdue, obstructions to surmount, and difficulties to overcome. There were members of Sanitary

Authorities who were elected and accepted the office for the sole purpose of reducing or "keeping down" the rates, and woe to the peace of mind of the engineer who was called upon to serve an Authority composed of such men,—men who, regardless of the health and comfort of the inhabitants, and unmindful of their duties as judicial expenders, sought by an ostentatious display of false economy to pose as the people's best friends. Such Authorities as these were generally imbued with the sentiment that they had little or no need of a skilled engineer; their principal ambition was but to evade the law and not to conform to it, by doing as little work and paying as little in salaries as possible. That idea, he was thankful to say, was weakening. Sanitary bodies were gradually recognising the folly of the penny-wise and pound-foolish policy, and trained engineers of practical experience, of sound education, and common sense were in increasing demand. It was for them as an Association to assist in fitting their younger engineers to meet this new order of things. Like Mr. Gilbert's policeman, the life of the Surveyor to an average Sanitary Authority could not be called "a happy one;" the number and differences of temperament, the constant change of his Board or Council, rendered his position often one of difficulty, doubt, and anxiety. It was said that "the proper study of mankind is man." That sentiment he commended to the Municipal and County Engineer, who, though he had all knowledge besides, and did not know his fellow man, was not likely to succeed. Passing from the engineer to speak of the Authority and the community, he said that we might have competent engineers able and willing to devote their energies to the carrying out of sanitary reforms, but if the community and their representatives did not truly understand their duties, the efforts of the engineer would be minimised, if not altogether lost. Why did a Sanitary Authority exist at all? Simply because by the springing up of a community the individual could no longer control his surroundings. Could he do this, he would in self-defence look to the sanitary conditions about him, but since it was impossible he could purify the atmosphere, or the rivers, or efficiently dispose of large quantities of sewage and refuse, or carry out the thousand needs demanded where there was an aggregation of people, the Legislature had wisely determined that where that condition came in, the community collectively should do what the individual could not do. It was conclusively established, though there were differences of climate, of habit, and surroundings which militated against the comfort of one district as compared with another, that the advancement of medical and sanitary science was such as to make it possible to have an increased health rate and a reduced death rate. The duty of the Sanitary Authority was simple and definite. It was to carry out the various Public Health and other Acts which had for their object the improvement of the health and comfort of the people. On economical grounds alone it was to the advantage of a community to spend a portion of its earnings on the sanitary improvement of its district,—in a word, to increase the district or borough rate, and to decrease the poor and police rates. Statistics clearly showed that the expenditure in the larger towns had resulted in a saving to the community, and that the neglect of expenditure on needful improvements had resulted in loss and suffering. Who could estimate the benefits which had accrued in large and crowded centres by the introduction of pure air and water, the widening of thoroughfares, with the attendant demolition of hotbeds of vice and filth, and the establishment of parks, open spaces and places of recreation for the rising generation? Roads, sewers, and means of water supply had been and still were constructed on too meagre a scale. A few years passed and the works proved inadequate, then the town was forced to spend large sums in acquiring additional property, which had often greatly increased in value through the former improvement; and many instances could be recorded where through such improved value improvements had been delayed or so modified as to be of little value. An experience of thirty years in municipal matters had shown him the error of procrastination. The longer necessary reforms were delayed the worse it would be. The health, the happiness, and the prosperity of the community would suffer. Though sanitary science was making headway, there still existed much ignorance in matters pertaining to the public health. The bulk of the people needed to be shown that money expended on the improvement of sanitary conditions was money well invested, that it was to their interest that such works should be of the best possible description, and that as by their nature such undertakings must necessarily be costly, it was the duty of their representatives to obtain the best advice. It was better to pay a few hundred pounds in salaries than to spend thousands on imperfect works designed by incompetent and less remunerated advisers. There were municipalities who had grasped the importance of following the dictates of true sanitary science, and who stood as beacon-lights to less favoured localities. The vast sum of money spent upon sanitary improvements in London, Liverpool, Manchester, Leicester, and other large towns bore witness alike to the knowledge and enterprise of their rulers and advisers. There were also smaller communities who, according to the means at their disposal, were endeavouring to pursue the same policy. Amongst these he claimed a place for the borough in which they were met, and to establish that claim he briefly enumerated the principal works executed or contemplated during the sixteen years of its incorporation. At the time of the last District Meeting of the Association in Bury in 1883 they were entering upon a large expenditure for the repavement of their streets with granite and wood. With regard to the waterworks, since 1883 two additional Acts of Parliament had been obtained, one in 1885 and the other in 1889. The latter Act gave power to construct a new reservoir on the Whitewell Brook (a tributary of the Irwell), situate in the townships of Cliviger and Higher Booth, in the Forest of Rossendale. Notwithstanding the advances made in electric lighting, the gasworks had been further extended, and powers obtained to construct a branch railway from the main line of the Lancashire and Yorkshire railway to the gasworks. As was known to some of the older members, Bury was one of the pioneers in erecting destructor furnaces; and the Corporation had decided that the time had arrived to extend those furnaces. The disposal of sewage, the improvement and the purification of streams, the lessening of smoke pollution, the demolition of insanitary dwellings, and other matters, were having the serious consideration of the Corporation. Turning from what might be classified as the active agencies of life saving and health improving works, he passed to another group of matters which were calculated to bless and aid those who dwelt among large populations. Since the former visit of the Association to Bury the inhabitants had subscribed no less a sum than 25,000*l.* for the establishment of recreation grounds. In addition, two private individuals had expended a sum estimated at 20,000*l.*, and one of them had further endowed one of the grounds with a sum of 5,000*l.* for its maintenance. The result was they had four parks at the points of the compass handed over to the borough free of cost, the Corporation undertaking to preserve the same for the use and enjoyment of the public. Preparations were on hand for the erection of an additional swimming bath, it being the intention of the Corporation to extend and encourage the use of the bath as an educational adjunct to the public school teaching. It had been decided to expend a sum bordering upon 10,000*l.* on erecting technical schools. The land had been acquired on favourable terms, not only for the school, but for the addition of an art gallery, library, and museum when the need arose for those buildings. The growing needs of the administration of the town had led the Council to consider the advisability of the erection of new Municipal Buildings, as also new markets and abattoirs. The premiated design for the municipal buildings was now being exhibited in the Royal Academy. The works, either in active progress, or which it was intended at no distant date to commence, were estimated to cost not less than a quarter of a million, whilst the abattoirs and municipal buildings were estimated to cost 72,000*l.* In addition to this capital expenditure, there had been expended on the construction of new streets, paid for by the owners of property during the same period, 104,000*l.* It was only right to observe that during the years occupied with these works, involving such large present and prospective expenditure, Bury had not been an increasing town. The enterprise had taken place rather in the face of decay in some of its chief industries, and in spite of many drawbacks. Notwithstanding, Bury had done wisely in these matters, and had set an example worthy of imitation by other towns. Having briefly referred to the papers to be read, Mr. Cartwright concluded his address by remarking that, as in all other sciences and professions, so in their own immediate sphere of labour, skill, application, and perseverance must prevail and bring success. The Institution of Civil Engineers was by consent the representative head of the civil engineering profession, but to the branch of engineering devoted to sanitary science their own Association had become and would continue to be a power and help. He entered upon his year of office determined, with the aid of the members, to maintain the usefulness of the Association. Thanking them for the confidence reposed in him, he trusted that the ensuing year would be a prosperous one for the Association, a year of progress and success, adding new friendships and cementing old ones.

The Mayor of Southampton (Mr. James Lemon, M.Inst.C.E., a member and past President of the Association) said they would be wanting in their duty if they did not pass a very cordial vote of thanks to the President for his very instructive address. He was pleased to see that the President had brought before the members what he called the business aspect of their profession.

Mr. G. F. Deacon (Water Engineer, Liverpool), in seconding the motion, remarked that he had rarely heard an address which contained so much real, practical, good advice.

The proposition was adopted with acclamation.

The members were then entertained to luncheon at the Derby Hotel, the Mayor (Councillor Ashworth) presiding.

On the conclusion of the repast, Mr. C. Jones (Ealing) moved a vote of thanks to the Corporation of Bury for their hospitality, which was heartily adopted, and was acknowledged by the chairman.

We will continue our report of the proceedings next week.

CONGRESS OF ARCHÆOLOGICAL SOCIETIES:

VISIT TO SILCHESTER.

THE second day's proceedings (July 21) of the fourth Congress of Societies in union with the Society of Antiquaries, whose opening session was reported in our last issue, took the form of an excursion to Silchester, in which all the representatives of the various provincial Societies took part, together with a small contingent from the parent society. Leaving Paddington at 10.5, a halt was made at Reading to enable the members to see, at the Museum, the results in detail of the two years' digging that has already been accomplished. The Duke of Wellington readily consented to the suggestion of the Society of Antiquaries that the Silchester finds should be deposited at Reading, and the Reading Museum authorities were prompt in providing special accommodation. The town is to be specially congratulated in having so capable and learned an honorary curator as Dr. Stevens, who has entered into all the arrangements with much zest and knowledge. Mr. Palmer, who received the visitors at the Museum, and offered them a cordial welcome on behalf of the town and corporation, stated that the general public are rapidly beginning to appreciate the value and interest of their collection, the last few summer weeks having produced a daily visitors' roll of upwards of 300 persons. The smaller of the two new rooms or galleries that have been added to the museum for the purpose of exhibiting the Silchester remains contain models of the more important parts that have been uncovered, such as the double west gate, and the larger and architectural remains. The largest of these is a mutilated but fine capital of a Corinthian pier, which doubtless formed one of a series that upheld the roof of the great basilica. In one corner is a restored piece of Roman roofing, made from the big stone tiles that have been found on the site. There is also the fragment of an attached capital found at the south gate, and part of the Doric impost of the central pier of the double west gate. Against the wall hangs a great plan of the Roman city of Calleva Attrebatum, or Silchester, enlarged from the accurate ordnance survey, with the excavations coloured up to date. Here Mr. G. E. Fox, F.S.A., who has had chief command of the

present series of diggings, delivered a brief lecture full of well-condensed material. He pointed out how the Romans in the early days of their occupation had seized upon this important site, where ancient main British roads crossed each other, and which had previously been entrenched by the Celtic tribes, and by degrees had walled in the great area of over one hundred acres, laying it out as a town in squares with all the formality and precision now used by the city builders of the United States. Here, he remarked, we found no trace of camps or military occupation. In the North, the chief relics of the Roman sway were great walls, erected to drive back and keep out the northern barbarians; but at Silchester we came across wonderful proofs of southern civilisation, far more splendid than warlike prowess, with which the Roman for some centuries dowered our country. Within the massive flint and stone walls of Silchester resided a population that may not have exceeded some six or seven thousand souls, for the city was by no means crowded in the buildings; but when it was remembered that the population of this island was probably not then a million, such a number of souls showed a place of no mean importance, and a place of even greater relative value than Reading of to-day. He pointed out the great basilica, 270 ft. long by 60 ft. broad, with its adjacent Forum and suites of offices and shops, which occupied the central square or insula of the city, and which was uncovered by Mr. Joyce in 1863, and all the recent clearing of houses, baths, and other remains, down to the last and most important work of clearing out the area of a Christian basilica. The members then adjourned to the second Norman gallery, which was filled with well-stocked cases, where Dr. Stevens discoursed on their contents. There is a wonderful wealth of Roman pottery of every description, from the coarsest to the most delicate, and of almost every variety of article in glass, bronze, iron, and bone, as well as leather shoes, wooden linings of wells, carpenters' and smiths' tools, locks, padlocks, and keys, and a great variety of tiles and flue-pipes for heating purposes.

After lunch, the large party went by train to Mortimer, and thence by carriages some two or three miles to Silchester. Mr. St. John Hope and Mr. Fox explained the excavations after a most interesting fashion. The great amount that yet remains to be done was forcibly impressed upon the party by the extent of fields yet untouched, and the great distance between one part of the diggings and another. The houses as yet uncovered seem to have been almost entirely constructed of flints set in concrete, cornered with thin square bricks and tiles. The system of drainage was elaborate and thorough. There was much curiosity shown to inspect the remains of the little Christian basilica, which was only uncovered last June, and which is in the central block or insula of the city, to the south-east of the Forum. Of this most interesting discovery it is needless here to give any detailed account, as it was described both in letter-press and plan in the *Builder* of June 18. Much discussion arose respecting it, in which Messrs. Fox and Hope took the chief part. The Rev. Dr. Cox tried to induce any sceptics who might be present to give their arguments against the Christian theory, but all in vain; though subsequently Mr. James Parker did set forth to a few some rather wild ideas as to Pagan sacrifices, suggesting it was a temple. However, the general opinion was unmistakably in favour of its Christian origin, the plan so nearly coinciding with various known examples of Early Christian churches, notably in Numidia, and not in any way agreeing with anything as yet known as identified with the heathen rites or civilian functions. It is anticipated with some confidence that further proofs one way or the other will yet be forthcoming as the excavations advance. We even heard it breathed by one enthusiastic advocate of the Christian theory that the circular building discovered some time ago on an adjacent insula, and vaguely labelled "a temple," might turn out to be a bapistery.

A keen discussion also arose in connexion with an opening in the great wall of the city at its lowest point, between the south and east gates, that was in process of excavation during the visit. Some thought that it was a little, or postern gate, of a later date than the original walls, but to others,—and they had the best of the argument,—it seemed to be undoubtedly the sluice-gate for the main drainage of the city. The propinquity of the baths supported this view. The only regret expressed by the congress members with regard to this excursion was the shortness of the time, and on all sides were heard determinations to revisit this site, by far the most interesting of all in Roman England. The visit of these representative archæologists is sure to quicken general interest in these most important excavations. At the present time about 25*l.* a week is being most prudently spent, and treble that amount could be wisely used if only the funds came in.

We may add that on Wednesday last a large party of members of the Surrey Archæological Society visited Reading and Silchester to see the remains.

THE ARCHITECTURAL ASSOCIATION:

VISIT TO CLAYBURY ASYLUM, WOODFORD.

THE building visited by the members of the Architectural Association on Saturday last is intended to serve as the fifth asylum for lunatics in the County of London, and will, when completed, accommodate 2,000 patients, exclusive of the isolation hospital.

The buildings are being erected from designs by Mr. George T. Hine, which were selected in a limited competition in 1887, since which time the buildings have been in course of erection. We may mention that we published a general view and ground-plan of the Asylum in the *Builder* for Nov. 23, 1889.

The plan is arranged on what is now generally accepted as the best model for an institution of this kind, the male and female department being separated by the various administrative offices, and the various classes of patients housed in separate blocks arranged *en échelon*.

The various blocks are differently planned to meet the particular necessities of each class of patients, the chronic wards comprising large day-rooms and dormitories, while the acute cases are housed in small wards with a large allowance of single rooms, so as to increase one of the chief advantages presented by the massing of patients in large asylums, the thorough sub-division of classes.

The detailed arrangements throughout combine all that ingenuity and experience can suggest to adapt the institution to the modern principle of treating the insane, which is curative in its aim rather than repressive, as in the days when many of our older asylums were erected. This view requires on the part of the architect that the building shall permit as much freedom as possible to the patients, while at the same time presenting the minimum of opportunities for injury either to the building or its inmates. Hence a modern lunatic asylum is full of special contrivances and arrangements which ordinary visitors would scarcely notice, and the full knowledge of which has restricted the number of our asylum specialists to a very few architects besides Mr. Hine. The modern treatment of lunacy demands also more provision for the embellishment of the asylum than is to be found in the barrack-like interiors of our older institutions. Hence the interior of Claybury Asylum is almost palatial in its finishings, its pitch-pine joinery, marble and tile chimney-pieces, and glazed brick dados, so much so that some of the visitors rather flippantly expressed a desire to become inmates. The recreation hall, for example, is lavishly decorated with an elliptical ceiling, richly ornamented with Jackson's fibrous plaster work, while the walls are panelled in polished oak, and the floors are to be finished in a similar manner.

The boiler and engine house are important features in an immense institution of this kind, in which steam is used for heating, electric lighting, laundry work, and for warming water throughout the building. The steam for all this work is generated in one central boiler-house, ten large boilers in all being provided for these purposes.

Athough the building is to be lighted by electricity generated on the premises, gas will be laid on for use in emergency, and will also be used for cooking purposes in the kitchen and wards.

The building is warmed and ventilated by a system of air-flues in the walls and trunks in the basement, in which are batteries of steam-pipes so arranged that the warmed air will ascend rapidly into the different rooms. A corresponding system of extraction flues carries off the vitiated air through extracting cowls in the roofs.

Water is laid on from the East London Water Co., and a system of mains surrounds the buildings both inside and outside for fire service, while a large tank at the top of the central tower, communicating with the fire mains by an electric valve, will give immediate extra pressure, sufficient to check a fire until the pumps can be started.

The estate on which the asylum is located comprises an area of 270 acres, including about 40 acres of woodland and a mansion, Claybury Hall, built late in the last century, which is now being enlarged and adapted as a private asylum for fifty paying patients.

Part of the estate will form the farm, which will give occupation to many of the patients, and will support the stock for the use of the asylum. Farm buildings for about 400 head of cattle and pigs are shortly to be erected, and the sewage of the institution will be utilised on the farm lands, though provision will be made for diverting the sewage into the public sewer, if necessary.

Illustrations.

ILLUSTRATIONS OF OLD CHESTER.*

VI.—HALL AND STAIRCASE, 24, WATERGATE-ROW, NORTH.

THE history of this interior appears to have been lost, the house being comparatively modern, except the cellars, which are extensive, but of no special interest. The hall and staircase are of oak, and are in good preservation. The upper floor was probably added when the house was rebuilt, the second stair being of more recent date.

Two doors west from this house stands a very large mansion, said to have been the residence of the Grosvenors, now the Liberal Club, and at the end of the Row is the half-timbered "Carnarvon Castle" public-house. Nearly every house contains good Elizabethan examples inside, but only fragments. This may apply to the entire north side of the street, the old houses having been replaced by more convenient ones, having plain (and, in many instances, very commonplace) brick fronts, the work of the speculative builder.

THOMAS P. IVISON.

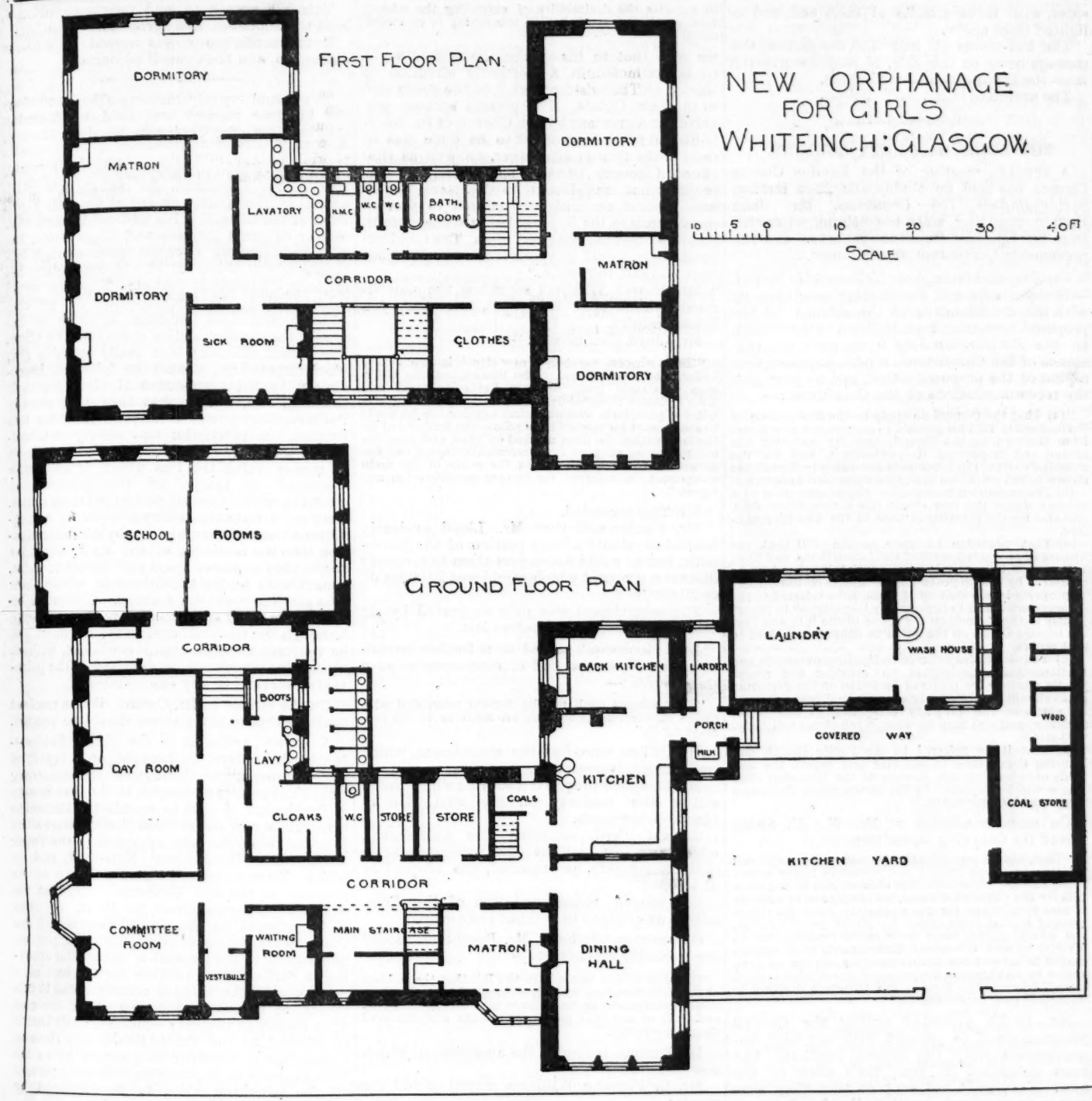
EDINGTON CHURCH.

A FULL description of this church, taken from a paper read by the architect for its restoration, before the Royal Archæological Institute, at its Salisbury Congress, was given in this journal on August 20, 1887, together with reproduction of the measured drawings. We need, therefore, only now state that in 1352 William Edington (a native of the parish), Bishop of Winchester, founded here a monastery of the Order of Bonhommes on the site of a previously-existing parish church. The present church (which remains nearly intact) served the double use of the chapel of the monastery and the parish church.

The restoration of the church, under the care of Mr. C. E. Ponting, F.S.A., architect, of Marlborough, has been completed, including the repair of the fine rood screen. One of the most interesting features of the work has been the restoration of the parish altar to its original position at the east end of the nave, a position clearly indicated by structural evidences. The ancient level of the floor of the easternmost bay of the nave was found to be 1 ft. 4 in. above that of the remainder, and this has been enclosed on three sides by light oak screens to form the sanctuary and to separate it from the aisles and the space under the tower without shutting out the view of the rood screen beyond. The drawing we reproduce (and which is now exhibited in the Architectural Room of the Royal Academy) shows the parish church as refitted. The central part of the eastern screen forming the reredos is solid, and the panels are being painted by Miss Eleanor Warre.

This church is a striking illustration of how completely the ancient plan lends itself to our present requirements. The ordinary services are much more conveniently provided for in the nave than (as as was recently the case) by treating the entire church as one, with only one altar, and that at the east end of the long

* For preceding views of this series, see *Builder* for February 6, February 27, March 12, April 9, and May 28 last.



chancel, from which the voice of the officiating priest was inaudible, whilst the chancel itself (which was the monastic chapel) is most convenient for early celebrations and other services attended by smaller congregations.

The builder who executed the repairs of the church is Mr. James Burgess, of Westbury; and the screen-work was carried out by Mr. N. Hitch, of Vauxhall.

HOUSE NEAR CALNE.

THIS house was designed for an Australian now resident in this country. An attempt has been made to design the house to harmonise with its surroundings. The "look-out" over the gable commands the best views of the country, and forms a picturesque feature of the design.

The walls are faced with dressed rubble, the dressings to windows, &c., being worked with an axed surface, and the roofs covered with small silver-grey slates. The public rooms will be finished with wood and other panelling. The plans sufficiently explain themselves, and will be carried out almost as shown.

The architects are Messrs. Gibson & Russell, and the drawing is exhibited at the Royal Academy.

NEW ORPHANAGE FOR GIRLS, WHITEINCH, GLASGOW.

THE new buildings for the "Glasgow Institution for Orphan and Destitute Girls" have recently been erected to supersede by a permanent home the temporary premises occupied from time to time by this philanthropic society, which has now been in existence for considerably over half a century. The site, extending to an acre and a half, faces the new Victoria Park in the extreme west of Glasgow. Accommodation is provided for sixty girls in all, who are trained for domestic service. The building has been planned to secure a south-easterly or south-westerly exposure for all the principal rooms, dormitories, and bedrooms, which nearly all command views of the park. On the ground-floor are dining-hall, day-room, and school-rooms for the children (the latter capable of being thrown into one for special occasions), besides committee-room, waiting-room, matron's sitting-room, and stores. The kitchen is behind the dining-hall, for convenience of service, and from it access is obtained to the offices grouped round the kitchen yard. Cloak-room and lavatory accommodation is provided conveniently for both front and back entrances. The girls' closets are outside, advantage being taken of the rapid fall of the ground to place these close to the back entrance, without interfering with lighting or ventilation in any way.

Two staircases are provided to the upper floors. The system of small dormitories has been adopted throughout,—six in all for the sixty girls, grouped in pairs, with a matron's room between, for supervision and control. Over 500 cubic feet have been allowed per child. Separate bath and lavatory accommodation is provided on each floor. The sick-room is on the first floor, commanding the park (it is not intended for infectious cases). Two or three attic bedrooms are provided for the senior girls.

The style of architecture adopted is Scotch Domestic. Though simple and destitute of ornate work (as befitting its character), the building is carefully studied so as to be home-like and suited to its purpose, and as far as may be from the ordinary square barrack type of charitable institutions. The rubble work is a warm purple-grey from Bothwell Park quarry; the dressings, a rich red from Ballochingle; it is roofed with green Westmoreland slates Internally the finishings are studiously simple; the scheme of colouring is, however, varied to produce a pleasant sense of brightness and variety for the children; the corridors are lined with warm coloured tiles. Originally designed in partnership by Messrs. Simon & Capper, the work has been executed to amended designs by Mr. S. Henbest Capper, M.A., A.R.I.B.A. Mr. James Mair was Clerk of Works; the principal contractor was Mr. John Smellie, Junr., of Partick. The total cost was rather under 5,000*l*. The illustration is from a perspective sketch by Mr. C. E. Mallows. S. H. C.

DESIGN FOR A HOUSE.

THIS perspective shows the entrance side of a small house, on a very steep slope, designed entirely in brick and roofed with tiles.

The drawing-room block is of one storey only, and in point of level is only a few steps below the bed-room floor. The staircase widens out on this first floor, level by passages on both

sides, with three arcades at each end, and is lighted from above.

The bed-rooms all look into the garden, the passage being on this side, as may be guessed from the treatment of the windows.

The architect is Mr. A. T. Bolton.

THE LONDON COUNTY COUNCIL.

A SPECIAL meeting of the London County Council was held on Friday, the 22nd inst., at Spring-gardens, the Chairman, Mr. John Hutton, presiding, when the debate, adjourned from the 19th inst., upon the report of the Improvements Committee, was resumed.

The Proposed Street from Holborn to the Strand.—The whole time of the meeting was taken up with the consideration of the scheme for the proposed new street from Holborn to the Strand. In the *Builder* for July 9 we gave the substance of the Committee's report, together with a plan of the proposed street, and we now give the recommendations of the Committee:—

"(*a*) That the Council do apply in the first session of Parliament in 1893 for powers to construct a new street from Holborn to the Strand, and for widening the Strand and improving Holywell-street, and for the subsidiary street improvements according to the scheme shown in red colour on the plans submitted herewith.

(*b*) That provision be made for the construction of a subway under the new street (for mains, wires, &c.), and also for the planting of trees in the new thoroughfare.

(*c*) That provision be made in the Bill that the owners of property benefited shall contribute, and that, with a view to ascertain what special benefits will be conferred by the proposed improvements on the owners of property in the vicinity of them, it be referred to the Improvements and Parliamentary Committees to report jointly to the Council on the frame of the Bill, and that the scheme shown on the plans be approved, subject to that report.

(*d*) That it be also referred to the Improvements and Parliamentary Committees to consider and report jointly whether the limits of deviation on the deposited plans should be sufficiently wide to enable the Council to purchase the property comprised in the larger schedule, and also that between Wych-street and Holywell-street.

(*e*) That it be referred to the Public Health and Housing Committee to consider and report the best mode of re-housing the persons of the labouring class who would be displaced by the construction of the new street and its approaches."

On recommendation *a*, Mr. W. Æ. Smith moved the following amendment:—

"That, having regard to the present and exceptional position in which lessees and occupiers in the metropolis, who are under contracts entered into in and since 1853 for the payment of rates, will be placed by a charge of rate upon them for the next sixty years for repayment of capital sums raised for street improvements, and which capital sums were never intended to be covered by such covenants, this Council is of opinion that it is inequitable to increase the burden on such lessees by undertaking the proposed street improvement from Holborn to the Strand, and therefore declines to undertake such improvement."

Mr. Smith protested against the Council pledging itself to proceed with any large improvements until the ground landlords had been compelled to bear their share of the cost. They must not suppose that they were going to construct another Northumberland-avenue. If there was any prospect of people laying out money in the new street as they did in Northumberland-avenue the case would be different.

Mr. Arthur Arnold seconded the amendment. He said he felt that whatever decision the Council came to, the matter would end where it began,—on paper. In his opinion, what the Council ought to do was to prepare a Bill stating what alteration in the taxation laws they deemed advisable in regard to improvements. They would then have a definite aim in view, and as soon as the Bill was passed they could proceed with the improvement.

Mr. Frederic Harrison, the Chairman of the Improvements Committee, said that the present scheme did not propose to throw the whole of the cost upon the ratepayers, but only half of the cost. It was proposed that the question of the raising of the other half should be referred to the Improvements Committee and the Parliamentary Committee jointly, and that they should submit a scheme to the Council in October. It was not reasonable for the Council to put its foot down on all improvements until an alteration in the law as to the incidence of taxation had been made by Parliament.

Mr. Fardell said he would not vote for the scheme if the ratepayers were to pay the whole of the cost.

After some further discussion, the amendment was put and lost by a large majority.

Mr. W. Saunders, M.P., then moved as a further amendment:—

"That the Improvements Committee be instructed to consider the desirability of extending the scheme both north and south before submitting it to Parliament."

He said that in his opinion the scheme ought to be extended in a northerly direction to Euston and King's-cross, and on the south side to the Law Courts. The present scheme provided for a crescent by the Church of St. Mary-le-Strand; but what ought to be done was to remove the church altogether, as well as that of St. Clement Danes. The Committee was proposing a magnificent improvement, which would leave an unsightly church to prevent people outside the improved area seeing into it, and those inside seeing out of it. The architectural effect would be spoilt if the two churches were allowed to remain.*

Mr. Howell Williams seconded the amendment, which, upon being put, was lost by a large majority.

Mr. Lloyd then moved:—

"That, whereas not only a new street is required to be formed from Holborn to the Strand, but the whole area of streets lying between Catherine-street and King's College Hospital needs re-arranging on a comprehensive plan, it is desirable that application be made to Parliament for powers to purchase the freehold of all the land within the lines marked on plan, and that the method to be adopted for conveniently laying out the area thus to be acquired, and the route of the main new street, be deferred for further consideration and report."

Mr. Torr seconded.

Mr. Clarke said that Mr. Lloyd evidently wished to rebuild a large portion of the metropolis, but he could not expect them to seriously discuss a proposal which would cost 20,000,000*l.* or 30,000,000*l.*

The amendment was only supported by six councillors, and was therefore lost.

Lord Monkswell moved as a further amendment to add at the end of recommendation *a* these words:—

"This scheme shall not be further proceeded with unless satisfactory provisions are made as to the pay ment for it."

Dr. Collins seconded the amendment, which was ultimately agreed to.

Mr. Campbell proposed a scheme which would utilise the roadway on the west side of Lincoln's-Inn-fields.

Colonel Ford seconded the amendment, which was lost, and the first recommendation of the Committee, as amended, was adopted by 61 to 6.

The second recommendation of the Committee was agreed to without discussion.

On recommendation *c*, Mr. Beachcroft moved the following amendment—

"That provision be made in the Bill that the holders of property benefited by improvement shall be liable to such contribution as Parliament may direct, either by such Bill or any Bills passed before the completion of the improvement."

Dr. Forman seconded the amendment, which was lost.

Mr. C. Fleming Williams moved to add the words:—

"And that provision be also made in the Bill for some equitable division of the net cost of the improvement between the owners of ground values in the Administrative County of London and the occupiers thereof, and that in the event of an equitable division being refused by Parliament, the scheme be no further proceeded with."

Mr. Marsland seconded the amendment.

Mr. Charles Harrison, the Vice-Chairman, suggested that the words "in the Bill" be omitted, and that "by Parliament" be substituted.

On a show of hands the amendment as amended was declared carried, and a division was called for, when there voted: For the amendment 63; against, 18.

Recommendation *c*, as amended, was then agreed to.

On recommendation *d*, Alderman Beachcroft moved that the following words be added:—

"And whether there would be advantage in the Council seeking power from Parliament to enable the Council to purchase the freehold interest only in such property, and, having purchased the same, to allow the leases affecting the same to run out."

Mr. Westacott seconded the amendment, which was agreed to.

Mr. Costelloe moved, and Dr. Collins seconded the further addition of the following words:—

"And whether power should not be taken with the same Bill to proceed with the widening of Surrey-street and Southampton-row."

This was agreed to, and recommendation *d*, with the additions, was agreed to.

Recommendation *e* was agreed to without discussion, and the Council adjourned.

THE usual weekly meeting (the last before the summer recess) was held on Tuesday afternoon last, the Chairman, Mr. John Hutton, presiding.

A Year's Work: Proposed Municipal Buildings.—The Chairman, in accordance with annual custom, gave a review of the past year's work of the Council. His address teemed with matter of great interest and importance, but we regret that we have not space enough left to attempt a *résumé* of it. In concluding his remarks, he observed that one obligation rested gravely upon the Council—that of erecting suitable municipal buildings in which to discharge the growing duties committed to them. The initial difficulty of a really suitable site, when disposed of, should be followed immediately by the preparation of plans for their building, and, seeing that they had already Parliamentary power to acquire land for this purpose, the remainder was simply mechanical. It would be difficult to put down in money value the loss which London now sustained by reason of the inconvenient offices in which the staff performed their duties. They were not actuated by a desire for a magnificent Council chamber, but by the determination that the members of the staff, at whose hands they expected good and efficient service, should work under conditions in which their best services could be secured. The work before them was of immense magnitude, and, although the Council consisted of 137 members, he ventured to think that it could not, without serious inconvenience, be deprived of the painstaking services of any one member.

On the motion of Dr. Collins, it was resolved that the Chairman's address should be printed.

Southern Approach to the Tower Bridge.—Mr. Frederic Harrison brought up a report of the Improvements Committee recommending "(*a*) That powers be sought in the first Session of Parliament in 1893 to enable the Council to construct a new street from Tooley-street at its junction with the new approach to the Tower Bridge into Bermondsey New-road, and to widen Bermondsey New-road thence to its junction to the Old Kent-road. (*b*) That the width of the new street be 60 ft. (*c*) That it be referred to the Improvements and the Parliamentary Committees jointly to prepare and submit to the Council a scheme for applying to Parliament to provide for the cost of a new street in the manner recommended in this report, so as to throw one moiety of the cost upon owners of property benefited. (*d*) That it be referred to the Public Health and Housing Committee to consider and report as to the arrangements to be made for rehousing persons of the labouring class to be displaced by the formation of the new street."

After two or three futile amendments on recommendation *a* in favour of alternative routes, on the motion of Lord Monkswell the following words were added to the recommendation *b*:—"but that the scheme be not proceeded with unless proper provision is made for the payment of it," and the recommendation as amended was approved.

Recommendation *b* having also been agreed to, Alderman the Rev. Fleming Williams, on recommendation *c*, moved the following addition:—

"That provision be made by Parliament for some equitable division of the net cost of the improvement between the owners of ground-values in the Administrative County of London and the occupiers thereof, and that in the event of this principle of equitable division being refused by Parliament the scheme be no further proceeded with."

The recommendation, as amended, was then agreed to.

Vauxhall Bridge.—The consideration of the report of the Bridges Committee, recommending the reconstruction of Vauxhall Bridge, was adjourned until after the recess.

Having discussed a great deal of other business, the Council adjourned, after a seven hours' sitting, until Tuesday, September 27.

BRIXTON PUBLIC BATHS.—We understand that Mr. A. Hessell Tiltman's design for these proposed baths was, on the recommendation of the Commissioners' referee, Mr. Henry Currey, awarded the first premium.

* Who is Mr. Saunders, that he is to pronounce on the architectural value of St. Mary's Church? Is he an authority on architecture? The assurance with which people of this kind lay down the law on architecture is really something astounding.—ED.

BUILDERS' BENEVOLENT INSTITUTION:

ANNUAL MEETING.

THE forty-fifth annual meeting of this Institution took place on Thursday, July 21, at the offices, No. 35, Southampton-row, Bloomsbury-square, W.C. Mr. B. E. Nightingale (President) occupied the chair, and amongst those present were Messrs. Thomas Stirling, E. Rider, C. Ansell, and other friends of the charity.

Major Brutton (Secretary) read the report, which stated that an advance in some degree in the income of the Institution would be likely to justify the Committee in advising that no eligible candidate need of necessity be excluded, even for a time, from participating in the anxiously sought-for comforts which the charity bestows upon its recipients. It was satisfactory to observe that, amongst fifty-five pensioners, only two deaths had occurred during the past year, while three others had been elected. In accordance with the will of the late Mr. R. A. Newbon, of Islington, the Institution was entitled to a legacy of 1,000*l.*, less duty. This had to be invested in the stock belonging to the Institution in the Bank of England, agreeably to Rule 12, which applied to legacies. The sincere thanks of the Committee were rendered to the President, Mr. B. E. Nightingale, for his energetic and effective appeal for the necessary means to meet the expenditure of the year, for his own liberality, and for the earnest and attentive interest taken by him in the prosperity of the Institution. The Committee had pleasure in announcing that Mr. Joseph Randall (of the firm of Messrs. Kirk & Randall) had accepted the Presidentship for the year, and would preside at the annual dinner in the hall of the Worshipful Company of Carpenters, on Thursday, November 3, when it was hoped to have a large and successful gathering.

Mr. Thomas Stirling moved the adoption of the report, which was seconded by Mr. E. Rider, and unanimously agreed to.

Cordial votes of thanks were passed to the President, Vice-Presidents, Trustees, Treasurer, Committee, and Auditors.

The Chairman then proposed that Mr. Joseph Randall be the President fur the ensuing year.

Mr. Stirling seconded the motion, which was cordially received.

A vote of thanks was passed to the Chairman for presiding, and a similar compliment was paid to Major Brutton, in recognition of his exertions on behalf of the charity.

The proceedings then terminated.

Books.

Continental Electric Light Central Stations. By KILLINGWORTH HEDGES. London: E. & F. Spon. 1892.

ON the occasion of the visit of the members of the Congress of Municipal Authorities to the Frankfort Exhibition, the Committee presented each member with a copy of "Die Versorgung von Städten mit Elektrischem Strom," which was "compiled from the reports of the principal German electrical firms and other users of the electric light, to explain the system adopted."

Mr. Hedges has obtained the permission of the contributors to make use of this material, and has so largely availed himself of it that the present volume may almost be regarded as a translation of the German work.

The author in his preface tells us that his object is two-fold: "first, to enable the members of lighting committees, and others taking up the question of the introduction of electricity, to obtain a rapid survey of what has been done abroad, both on a large and small scale; and, secondly, to enable electrical engineers to follow those arrangements for distributing electricity which differ from the usual English practice."

In other words, he addresses himself both to technical and non-technical readers, who have a practical interest in the subject.

The result is what might be expected from an attempt to sit on two stools at once. The engineer passes over with impatience popular descriptions of elementary matters, such as the series system with which he is familiar, while the non-technical reader finds that his ignorance of the elements has been insufficiently allowed for, and that he can scarcely get along, even with the help of the glossary at the end of the book. In this glossary, by the way, Mr. Hedges lies under considerable and unacknowledged obligations to our contemporary *Lightning*.

Not the least interesting part of this work is the table of contents, which gives not merely the page on which the description of any particular station will be found, but, also in tabular form, many important details, such as output, pressure and motive force, and also a column of short explanatory notes. The column headed "Motors worked" might, however, almost as well have been omitted, so vague is the information it contains. Indeed, only in the case of the Esslingen Co. is there any real information, viz., "36-h.p. for motors." In other places, we only find an unsatisfactory "large number," "use increasing," "extensively used," or some such expression.

The general plan of the book is as follows:—Part I. deals with high pressure distribution with alternating current and transformers. Part II. with low pressure distribution by continuous current, either direct or with secondary batteries. Part III. with miscellaneous matters, such as a popular explanation of the polyphase system, measuring instruments, tables, laying mains, and the aforesaid explanation of technical terms.

On comparing the total output high and low pressure of all the stations mentioned, we find 136,160 16 c.p. lamps high pressure, against 324,790 low pressure. Allowing for the longer time the low-pressure system has been in vogue, these figures would seem to indicate that the opinions on the continent are nearly equally divided as to the merits of the two systems. In Berlin alone, there is an output on the low-pressure system larger than the whole high-pressure output; but if we exclude Berlin and Hanover, the three largest supply stations mentioned are on the high-pressure system.

The bulk of Mr. Hedges' book consists of brief descriptions of the various installations, useful enough for reference, but no more suitable to be read straight through than a catalogue is. The working drawings, photographs, and sketches, really afford more information than the text, showing, as they do, at a glance the general arrangements; though the value of the reproductions of the photographs is lessened in that they are frequently indistinct. In print, paper, and binding, the book is all that could be desired.

The Principles of Ornament. By JAMES WARD. Edited by GEO. AITCHISON, A.R.A. London: Chapman & Hall. 1892.

THIS is not a second edition, in the usual sense, of the little book which we reviewed in the *Builder* of July 19, 1890; it is a re-issue in a somewhat different form; Professor Aitchison having used Mr. Ward's book as a basis for working up a treatise with considerable additions, somewhat altered in form and arrangement, and with a good many new illustrations. The reason for this arrangement is given in the editor's preface. As examiner on the Principles of Ornament at the Science and Art department, he found there was no good English text-book on the subject; and Mr. Ward's, which had been sent to him, did not meet his approval altogether; but he thought it unfair to try to supplant it by an entirely new text-book after Mr. Ward had been at all this trouble, and therefore consented to edit a new edition.

A great deal of Mr. Ward's original matter is retained, but it has been condensed and improved in literary style, and while most of the original illustrations have been retained, others have been added which are more important and drawn with more finish. An introductory chapter by Professor Aitchison has also been added, giving a general review of the subject of ornament, in the course of which the essential distinction between ornamental design and the mere copying or adapting of natural forms is well given in the following words:—

> We have a novel phase of applied ornamental art, which mainly consists in twisting or arranging certain plants into the shape required, making some alteration in them for our purpose and to make them fit their places. Much of this work is flabby or wire-drawn, and often omits the highest beauty of the plants it uses, but even when the beauty of the plant is not left out, the ornament is infinitely below the highest flights of former art, in which the artist had absorbed the graces of floral growth and had properly applied them. The highest ornamental art is, by its abstraction, closely allied to architectural art, while all its higher achievements are in conjunction with architecture; consequently there should be a harmony between the decoration and the framework. Natural foliage arranged on a geometrical basis makes a poor contrast to noble architecture.

This may serve an example of the excellent manner in which things are put in the introductory chapter; and in treating the rest of the book Professor Aitchison has given additional value to the opinions and criticisms of the original author by putting them into simpler and more logical literary form than before. The book is now a satisfactory and useful educational treatise on ornament.

The Garden of Japan: A Year's Diary of its Flowers. By F. T. PIGGOTT. With Four Pictures by Alfred East, R.I. London and Orpington: George Allen; 1892.

THIS book, which has had the honour (as we suppose Philistines must consider it) of being issued by the country publisher who was alone found worthy to publish the works of Ruskin,* is a most charming little publication *de luxe*, beautifully illustrated with chromolithographs and other drawings of Japanese flowers. The author, who has lived for some years in Japan, and come back (as so many residents there do) thoroughly in love with the Japanese country, has written a series of notes on the flowers characteristic of each month in Japan, interspersed with picturesque descriptions of scenery and people, and occasional verses which we take to be Japanese poetic thoughts put into an English dress. The whole is charmingly written, and contains information about Japanese flowers which may be of value in another way, while the volume is a little work of art in itself. What Mr. Piggott says of the Japanese flower worship is characteristic: "Somehow we (in England) seem to take it all for granted; but in Japan the flower, and more especially the first of its kind, is actually greeted with a solemn and becoming reverence. The admiration is active, not passive; it is derived not from a passing glance, but from a steady lingering look ending in one of those soft gurgling sounds which are potential in expression of infinite and complete satisfaction." We cannot help thinking, however, that there are people in this country who can admire and love flowers as passionately as any Japanese, though they may not "gurgle" over them.

The Employers' Liability Act, 1880, *with Decisions, Notes, and Explanations.* By R. M. MINTON-SENHOUSE, Barrister-at-Law. London: H. Cox, 1892.

THERE is no lack of works on this important Act, but, as is the case with many other legal books, new decisions soon put them out of date, so that a fair reason can generally be found for a new volume on this subject. We cannot say, however, that we are altogether pleased with this book: the law appears to be accurately stated, but the form is unsatisfactory. First of all, we have an introduction mainly concerned with one subject, namely, the doctrine of common employment. Then we have a part headed with the above Act, but which is in fact a précis of the Act, mingled with notes and decisions. After that comes a kind of treatise on the terms, "Workman," "Employer," and "Negligence." Then chapter iv. deals with "Defences," and chapter v. with "Procedure." Chapter vi. is concerned with Lord Campbell's Act; and, finally, we have the Employers' Liability Act itself, with references to the previous pages. There is no doubt that almost all the rest of the book should have formed notes to the Act, and there is equally no doubt that the form of the book is inconvenient. We should have been glad also to have seen the dates of the various decisions stated, so that the chronological progress of the law on the subject could have been followed. On the whole, we have in this book a work not without its uses, but not as good as it might have been.

Secondary Batteries. By J. T. NIBLETT. London: Biggs & Co.

IN this little book the author has collected and clearly described a number of details of a very practical nature concerning a great number of secondary batteries, of all shapes and sizes, many of which are in practical use at the present time. The particulars of weight, size, charging and discharging rates are clearly stated, according to the figures furnished by the various makers, in small tables throughout the book, and due prominence is given to the all important questions of proportion of useful lead, and capacity per unit of weight of plates.

The author gives a great deal of very interesting information regarding the actual

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* We observe, by the way, that Mr. Allen is now of "London and Orpington." This must be a sad blow to Mr. Ruskin.

methods in use of constructing the various forms of plates which he describes.

The consistent use of the terms "positive and negative" plates all through the book is satisfactory, and all such confusing terms as electro-positive and electro-negative elements are well avoided, possibly the footnote on this subject on page 224, might, with advantage, have appeared somewhat earlier in the book.

The various forms of hydrometers, and accessories in storage battery work are mentioned, and in the appendix some useful tables regarding the densities of various solutions are given, also a variety of simple chemical and electrical notes.

The illustrations are clear, comprehensible, and well reproduced; and the whole book seems to fulfil the purpose for which the author appears to have intended it.

The Students' Column.

CONCRETE.—V.

CEMENTS.

CEMENTS may be defined as finely-ground compounds of lime and other substances which set on the addition of water without any preliminary slaking action. They are sometimes divided into natural and artificial cements, and may be classified thus:—

Natural Cements.—1. Roman, Medina, and similar cements. 2. Plaster of Paris and similar cements.

Artificial Cements.—1. Slag cement. 2. Portland cement.

Certain magnesian limestones furnish hydraulic cements, but it is not necessary to describe them in detail.

NATURAL CEMENTS.

1. *Roman Cement, &c.*—The discovery of natural cement in England is due to Parker, who in 1796 took out a patent for its manufacture. Up to that time, English architects and engineers had relied chiefly on puozzolana from Italy for rendering lime hydraulic, and it was probably for this reason that the name "Roman Cement" was given to the new discovery. The cement was originally obtained by the calcination of nodules, or septaria, found in the London clay, and afterwards of those dredged from the Solent. These contain more clay than the raw stone either of hydraulic lime or Portland cement. The latter contains about 25 per cent. of clay, &c., while Roman cement contains from 25 to 35, or even 40 per cent. Besides the cement more particularly known as "Roman," there are others which are very similar, but which have received different names; such as "Medina Cement," made in the Isle of Wight; "Atkinson's Cement," made at Whitby in Yorkshire; and "Harwich Cement" and "Sheppey Cement," named from the places of their manufacture.

Some of the Carboniferous limestones of Derbyshire, &c., and of the lias limestones of Warwickshire, yield on calcination cements approximating to the Roman cement. Tests of a Rugby lias cement are given in Table II., Chapter III. At Boulogne, in France, a natural cement is found, which, from its similarity, both in composition and action, to Portland cement, has been called "Natural Portland." America, however, is the great home of natural cements, and there such cements have received most attention. In England the Roman and kindred cements have been largely superseded by Portland cement, because of the superior strength of the latter and its greater capacity for sand. There are, however, situations in which the natural cements can be used with advantage on account of their quickness of set, but there are Portland cements manufactured now which set almost as quickly as the natural cements.

Into the details of manufacture and composition we do not propose to enter. It will suffice to say that the composition of natural cements, even from the same place, varies considerably, and this, of course, is a disadvantage. They are burnt at a comparatively low temperature, otherwise they would fuse into glassy, useless lumps on account of the iron, &c., which they contain. After calcination, they contain a certain amount of uncombined lime, that is to say, calcium oxide, and also a small quantity of tri-calcium silicate, which is, according to Le Chatelier, the most important ingredient of Portland cement; the bulk of the cement, however, consists probably of calcium aluminates, and it is this which differentiates them from Portland cement. The cement-stone, after calcination, will not slake on the addition of water, and is therefore ground between mill-stones; the powder is then packed into barrels or sacks, ready for use, and should be kept thoroughly dry, as it is very liable to deterioration from moisture. The finer the cement is ground the better will it be.

Weight.—The weight of a striked bushel of Roman or Medina cement is about 75 lbs. to 80 lbs., being therefore about 30 lbs. less than the same quantity of Portland cement.

Strength. — In comparison with Portland cement, the strength of the natural cements is only small. "Experiments," published by Mr. Grant in 1880, show the tensile strength of a "Rugby lias cement," which weighed 74 lbs. per striked bushel, and of a Portland cement which weighed 114 lbs. per striked bushel. Both were made into briquettes with various proportions of sand, five briquettes of each kind being kept in air and five in water; and all were tested when twelve months old. The results are given in lbs. per square inch:—

TABLE VI.

Strength of Natural Cement.

	Weight per Bushel.	Proportions of Cement and Sand by Volume.							
		1 to 3.		1 to 4.		1 to 5.		1 to 6.	
	lbs.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Rugby Lias Cement...	74	78	142	63	110	40	75	20	46
Portland Cement	114	198	216	164	171	144	143	113	124

This table shows at a glance the great difference in strength between the natural cement and the artificial one, and it also exhibits plainly the superior sand-capacity of the latter. The Rugby Lias cement mortar (1 to 6) is 70 per cent. weaker than the 1 to 3 mortar, while with Portland cement the difference is only 43 per cent.; or, to put it another way, Portland cement is about twice as strong as the other when both are mixed with three parts of sand, but with six parts of sand it is nearly four times as strong. According to this table, the strength of briquettes kept in water is, at twelve months, considerably in excess of those kept in air. Table VII. shows the strength of other natural cement briquettes, at twenty-eight days, to be less when kept in water than in air.

Professor Dr. Boehme obtained the following results with Roman and Portland cement mixed with sand in the proportion of 1 to 3, some of the briquettes being kept in air and some in water:—

TABLE VII.

Strength of Roman and Portland Cements.

Roman Cement.	Sand.	Measured by.	Kept in.	Strength in lbs. per sq. in.				Ratio between Tension and Compression.	
				Tensible.		Compressive.			
				7 days.	28 days.	7 days.	28 days.	7 days.	28 days.
1	3	weight	water	40·5	121·5	300	882	1/7·4	1/7·3
,,	,,	,,	air	111·5	200	530	[114·9 A]	1/4·8	1/5·628B
,,	,,	volume	water	18·5	54.1	123	322	1/6·7	1/5·9
,,	,,	,,	air	58·2	[940 c]	178	488	1/3	1/5·797D
Portland Cement.									
1	3	weight	water	211	273	1,735	2,690	1/8·3	1/9·8
,,	,,	,,	air	237	304	1,860	2,800	1/7·9	1/9·3
,,	,,	volume	water	203	265	1 535	2,490	1/7·6	1/9·4
,,	,,	,,	air	228	278	1,715	2,670	1/7·5	1/9·6

These figures are taken from the *Proceedings* of the Institute of Civil Engineers, vol. ciii. (1890-1), part 1. The result marked A,—114 9 lbs.—is evidently wrong; perhaps the decimal point ought not to have appeared, making the result 1149 lbs., in which case the ratio between tension and compression, marked B, ought to have been $\frac{1}{5\cdot745}$; assuming, however, the ratio, $\frac{1}{5\cdot628}$ to be correct, the result A ought to read 1125 6 lbs. Again, the tensile strength of 940 lbs. is evidently an error; if 94 lbs. be meant, as probably it is, the ratio will be $\frac{1}{5\cdot191}$ instead of that marked D, $\frac{1}{5\,797}$.

One important point which these tests exhibit is the great difference in the strength of mixtures of Roman cement and sand, measured by weight and by volume. The difference with Portland cement is not so striking, because, bulk for bulk, the weight of Portland cement is not much different from that of sand; in this case, the proportion of 1 to 3 by weight was equal to 1 to 2·864 by volume. But with Roman cement the briquettes, proportioned by weight, are, on the average, exactly 60 per cent. weaker than those proportioned by volume. This difference is due to the heaviness of the sand in comparison with that of the cement; the briquettes measured by volume contain, therefore, considerably less than those measured by weight. When we consider that in making briquettes, the ingredients are usually proportioned by *weight*, and in making concrete or mortar by *volume*, we see how easily an error may be made in calculating the probable strength of a structure. If tests of briquettes made by weight give a certain strength per square inch, and this strength be made the basis of calculation for the strength of concrete made by volume, the result may be disastrous, for the concrete may have less than half the strength which the calculations show it ought to possess.

A little arithmetic suffices to reduce the proportion by weight to the proportion by volume, provided that the weights of the cement and sand are known. If cement weighing 75 lbs. per bushel be mixed with sand weighing 100 lbs. per bushel in the proportion of 1 to 3 by weight, we should have 75 lbs. (= 1 bushel) of cement, and 225 lbs. (= 2·25 bushels), of sand, or a proportion of 1 to $2\frac{1}{4}$ by volume, which would be 20 per cent. stronger than 1 to 3 by volume.

The great strength of Portland cement in comparison with the Roman is also plainly shown. If we take the briquettes proportioned by volume and set in air, these being the conditions usually obtaining in buildings, we find the tensile strength of Portland cement and Roman cement to be as 4 to 1 at seven days and 3 to 1 at twenty-eight days, and the compressive strength as nearly 10 to 1 at seven days and over 5 to 1 at twenty-eight days. These ratios show that the Portland cement, although it sets more slowly than the other, attains a greater proportion of its ultimate strength at seven days than does the Roman. Some interesting experiments with Portland cements and natural American cements were made by Prof. E. J. De Smedt (of Washington, U.S.A.), showing their gradual increase of strength from one day to twelve months; at ten days the Portland cements were about one-half the strength they attained at twelve months, and the natural cements about one-third.

The adhesive strength of natural cement is only about one-half that of good Portland cement, both tested neat; and the advantage of Portland cement increases with increasing quantities of sand.

Cubes of Portland cement concrete have a

resistance to compression more than six times that of cubes made with natural cement.

In fact, so great are the advantages of Portland cement that it has almost ousted the other from the market. One reason why the natural cements continue in use is that they set in a few minutes, and can, therefore, be used in running water, where a slow-setting cement would probably be washed away before it had had time to set. Such cements are also useful for bedding floor-tiles upon, and for other purposes where rapid setting is a necessity. This rapidity of setting, however, renders the cement difficult to use, and, in the hands of careless workmen, causes bad results. Only a little should be mixed at a time, and that must be used immediately.

Correspondence.

To the Editor of THE BUILDER.

COMPOSITION OF ANCIENT MORTAR.

SIR,—I have waited to see if the letter of Mr. T. E. Knightley, in your issue of July 2, would be followed by others, in order that any comments on my paper in the *Builder* of June 18 might be answered all together. At present, however, I have only to thank the above-named gentleman for the complimentary manner in which he has written of my paper on "Ancient Mortar." I would take the opportunity of asking Mr. Knightley if he would explain more fully and with the aid of chemical analysis what he means by the "impalpable earthy matter which affects crystallisation," and which, he says, is associated with the sand taken from the gravel in the Thames Valley. Clean, sharp sand, as generally used for mortar, does not contain matter likely to affect crystallisation. Indeed, the action of crystalline sand is purely mechanical, making the mortar more porous, and providing a larger surface for subsequent contraction of the lime compounds, and so preventing cracking.

Gelatinous silica (sometimes termed soluble silica, from the fact that it is readily soluble in a solution of soda or potash) does, on the other hand, exert an important influence in the crystallisation of lime and alumina; indeed, it is the active agent in cement and hydraulic lime of the blue lias formation. Consequently, in my paper special attention has been directed to the separate determination of such gelatinous silica as distinguished from ordinary quartz sand. Does Mr. Knightley refer to this kind of silica, or to ordinary clay in its natural unburned condition?

Oxide of iron and alumina being practically insoluble in water, whereas lime is soluble to the extent of one part in 750 parts of water, any rottenness in the mortar would more probably be due to the quality of the lime than to that of the sand; at least, that is the view which, in the absence of fuller information, presents itself to my mind as being the probable explanation of the inferior mortar referred to by Mr. Knightley. As most of the lime used in the neighbourhood of London is derived from the chalk formation, and is, therefore, poor in the gelatinous form of silica I have alluded to, it is quite natural that the surface of buildings erected with lime of that quality should soon become affected by the action of rain-water highly charged with carbonic acid derived from the smoke of a large city.

JOHN HUGHES.

"THE EXAMINATION IN *ARCHITECTURE* (?)."

SIR,—If Mr. Nevill would but sit *incog.* once for the Examination, perhaps he would appreciate the moral iniquity attached to the above expression.

If, as he says, the Institute does not see its way to judge the tests which itself sets in pure Architecture, let it be consistent and say so, and act thereon by eliminating every vestige of arttest in the shape of history, biography, features, and, above all, the delusion of design.

The outcome of this would be that the qualification would be rightly, and what it always has been, not an artistic one.

This would result in a purely utilitarian examination in "Building Construction and Practice," which is absolutely essential for both the public and professional weal; there would thus be a distinct gain of time for the extension of other more important matters by the excision of the purely architectural sections. This may meet the diploma difficulty, which some of the "Memoralists" view with such hate and horror, and would safely justify the employment of any practitioners so qualified, without the fallacious delusion which accompanies the objectionable expression "Examination in Architecture."

WILLIAM A. PITE.

5, *Bloomsbury-square*, July 26, 1892.

FIRE-PROOF ROOMS.

SIR,—I have recently inspected some fire-proof strong-rooms in the City, and find that in most instances gas is used for illuminating the interiors of such rooms.

Will you allow me to point out the great risk that is thus run in cases of gas explosion, &c.

Owners of such strong-rooms guard against the enemy, fire, from without, while within there is a worse danger.

JAMES JORY.

CEMETERIES.

SIR,—Can any of your readers tell me if there is any work published on the laying-out of a cemetery and the general duties of the Surveyor to a Burial Board?

NECRO.

OBITUARY.

MR. H. G. AUSTIN, F.R.I.B.A.—The *Times* of Tuesday last announces the death of Mr. H. G. Austin, which occurred at his residence in the Cathedral precincts, Canterbury, on Monday, in the sixty-ninth year of his age. The care of the fabric of the Cathedral has been in the hands of the late Mr. H. G. Austin, and his father, Mr. G. Austin, far about eighty years. In 1848 Mr. Austin succeeded his father as Architect and Surveyor to the Dean and Chapter, and he held the position until his retirement some three years since. Under his supervision many extensive works were carried out. Sixteen or seventeen years ago he restored the roof of the nave and re-faced the clock tower, in the niches of which new figures were placed.

GENERAL BUILDING NEWS.

NEW WORKHOUSE FOR THE PARISH OF ST. GILES, CAMBERWELL, AT EAST DULWICH.—This workhouse, of which the foundation-stone was laid on the 21st inst., is for 1,000 inmates, comprising aged, infirm, imbeciles, and a few lunatics. Provision is also made for sixteen beds in two lying-in wards. The workhouse is designed upon the pavilion system, the Administrative Block being in the centre, and the male and female pavilions on opposite sides. Provision is made for two classes of aged inmates,—viz., those in health, and those who, by reason of their feebleness, occupy their dormitories both by day and by night. Many of the latter are chronically bed-ridden. The estimated cost of the whole of the buildings, including the engineers' works and fittings of every kind, is 70,000*l.* We understand that the whole of the drainage has been executed with Doulton's London stoneware pipes, fitted with their patent self-adjusting joint. Each length of drain, previous to being covered in, has been subjected to the water-test, and approved. The architect is Mr. Thomas W. Aldwinckle, and the builders are Messrs. F. & H. F. Higgs.

NEW INVERLOCHY CASTLE, INVERNESS.—According to the *Dundee Advertiser*, the modern Castle of Inverlochy is about a mile and a-half from the ruins of the Old Castle, and is situated almost at the base of Ben Nevis. About eighteen months ago the late Lord Abinger determined to enlarge and remodel the Castle, which extensive improvements are almost fully carried out. The earlier part of this edifice was built in 1863, from designs by Mr. Hesketh, of London, and comprises about one-third of the Castle as now completed. The present addition is from designs by Mr. J. Macvicar Anderson, architect, London, and is partly in the Scottish Baronial style. The stone used in the building is grey granite, obtained on the estate, and the white freestone dressings and copings are from Giffnock Quarries, near Glasgow. The chief feature of the new addition is a massive square battlemented tower, 30 ft. by 30 ft., rising to a height of 65 ft. above the basement, and surmounted on two corners with square turrets. On the south it is flanked with a 12-ft. octagon turret or clock-tower, rising from the basement to a height of 80 ft. After leaving the roof of the main tower the turret comes slightly out above a moulded cornice, finished on the top with a battlement coping. The windows in the main tower have partly segmental and partly Gothic arches. To the south front are two bay windows, the one from the hall being 20 ft. across, and the other 18 ft. They are executed in white freestone, interlaced with granite ashlar, being finished on the top with battlement coping in granite and freestone. Above each window on the main wall a stepped and pointed gable is carried up. The porch entrance is a pointed Gothic archway, and finished in the inside with rustic granite ashlar. The principal feature of the north-west elevation is a tower, 20 ft. square, surmounted with battlement and turret on angle. A bay window also projects from the kitchen and billiard-room wall, carried up and finished on the top with spaced copings. A crow-stepped gable runs up on the main wall. In the interior, the basement contains servants'-hall, 25 ft. square, brushing-room, dairy, heating-chamber, &c. The whole of the main tower is taken up with servants' accommodation. The other tower contains bed and bath rooms, with a studio on the attic floor for painting. Passing through the porch entrance, to the right are lavatories, the walls of which are lined with white enamelled tiles, and the floors are finished with encaustic tiles. To the left is Lord Abinger's studio, which is finished in Columba pine, and having a solid floor executed in pitch-pine blocks, On the ground floor there are also drawing and dining rooms and library. Over the basement floor are kitchen, scullery, butler's pantry, larders, &c. The chief feature internally of the new addition is the hall, which is nearly 40 ft. square. It is 25 ft. high, and the finishings are in wainscot. The floor was first laid with red pine, then overlaid with fine oak parquet. The grand staircase is executed in oak, with balusters of a trussed and fluted pattern, and moulded and carved pedestals. On the landing of the bedroom floor there is a gallery or promenade, with a balustrade protection, overlooking the hall. On this floor there is a billiard-room, 26 ft. by 20 ft., lighted by bay windows and overhead lantern. The floor is laid with pitch-pine blocks, and arched under on iron beams. The finishing of this room is also in Columba pine. The remainder of this and the attic floor contains bedrooms, dressing-rooms, lavatories, and bath-rooms. With regard to the ventilation and heating, coils of pipes with ornamental covers are placed in the principal rooms, corridors, and passages. The whole building is lighted by electricity, which work has been carried out by Mr. Yorke, London. The surveyors of the addition to the castle are Messrs. S. J. Thacker & Son, London; while the sole contractors for the work are D. & J. Milligan, building contractors, Ayr, under whom the internal plumber work has been done by the North British Plumbing Company, London; heating, G. N. Haden, London; outside plumber and slater work, M'Ilwrath, Cowan, & Co., Ayr; plaster, J. Annan, London; painting and decorations, J. B. Bennett & Son, Glasgow.

SCHOOL BUILDINGS, CARLISLE.—On the 25th inst. the new Brook-street Boys' School, Carlisle, which has been erected by the Carlisle School Board at a cost of about 3,500*l.*, was opened. The new school has been built to match the infants' department which was opened last October. The area covered is over 40,000 square feet, of which the boys' department occupies 5,550 square feet, the infants' 8,000 square feet, and the girls' department, to be added at some future date, will occupy 5,772 square feet, leaving over 8,000 square feet for the boys' playground and covered play-shed, and the remainder for girls and infants. Plans for the girls' department have already been prepared, and show the provision of a cookery-class room for fifty pupils. The large room of the boys' school, which is 85 ft. by 20 ft., and which is divisible into two, will accommodate 148 scholars, and there are class-rooms at either end with accommodation for sixty each. A master's room, with bay window, overlooks the playground, and the heating, lighting, ventilating, lavatory, and drainage arrangements have had special attention. The contractors who have carried out the plans of Mr. Scott were:—Builder, Mr. J. Laing; joiner, Mr. Lattimer; slater, Mr. Nanson; plumbers, Messrs. D. Thomson & Sons; plasterers, &c., Messrs. R. M. Ormerod & Son; painter and glazier, Mr. Ballantine. The heating apparatus and furniture were supplied by Manchester firms.

NEW CHURCH FOR EDINBURGH.—At the Edinburgh Dean of Guild Court, on the 21st inst., a warrant was granted to the trustees of the Merchiston United Presbyterian Church to erect a new church at Polwarth Gardens. The site of the new building is immediately to the east of the hall in which the congregation at present worships, and, after the completion of the new structure, this building will serve as the church hall, for which purpose it was originally intended. The building will be in the Late Gothic style. Accommodation is provided for 600 in the area, and for 265 in the gallery. Mr. David Robertson, of Edinburgh, is the architect.

PUBLIC BATHS, ISLINGTON.—On the 26th inst. the Lady Mayoress inaugurated the new baths and washhouses which have been erected in the Hornsey-road for the convenience of the inhabitants of the northern and eastern portions of the parish. The present establishment is the second of three it is intended to provide for the use of the people of Islington. The building covers, with the quadrangle in front, a little over an acre, and contains the following accommodation:—Two large swimming-baths for men, one 132 ft. by 40 ft., and the other 100 ft. by 35 ft. (water measurement); one swimming-bath for women, 75 ft. by 25 ft.; seventy-four private baths for men, and thirty-four for women; forty-nine washing compartments and drying-closets; together with ironing-room, bonnet-

room, and wringers, the whole being ventilated by a fan worked by machinery; a large establishment laundry, separate residences for the superintendent and matron, and for the engineer, and an engine-house containing all necessary machinery for the baths and for developing electric power for lighting 332 incandescent lights and two arc-lights. The cost of the building, machinery, &c., has not exceeded 32,000*l.* The architect is Mr. A. H. Tiltman, and Messrs. Macfarlane & Co. are the builders.

WESLEYAN CHAPEL AND SCHOOLS AT BERRY BROW, YORKSHIRE. — On the 23rd inst. four corner stones of a new chapel and schools for the Wesleyan Methodists of Berry Brow were laid. The chapel is to accommodate 450 persons, and the school 400 scholars, and the estimated cost is about 3,500*l.* The style adopted is of the English Renaissance, and the buildings are being erected from the designs of Mr. E. W. Lockwood, Huddersfield.

NEW FREE LIBRARY, SHOREDITCH.—The work of converting the building in Kingsland-road, Shoreditch, formerly occupied by a Gas Company, into a public library, is being proceeded with, and it is expected that the work will be completed by the end of next month. The old Board-room on the first floor has been converted into a reference library, 30 ft. by 25 ft., with coved and panelled ceiling and parquetry floor, and is fitted with book-shelves of pitch-pine. At the rear of this room is a lending library, 25 ft. by 25 ft. The ground floor is taken up with the hall and lobby, which is paved with mosaic, and the news-room, in the front portion of the building. To the rear of the news-room is the magazine department, and the librarian's-room is situated close by. The building is heated throughout with hot water, and lighted with gas. The architect is Mr. R. J. Lovell, of Queen Victoria-street, and the builder is Mr. J. Ivory, of Great Cambridge-street, Hackney-road.

SANITARY AND ENGINEERING NEWS.

PUBLIC HEALTH (LONDON) ACT, 1891.—We are informed that the Local Government Board have approved the Sanitary Institute as a body whose Certificate that a person has by examination shown himself competent for the office of Sanitary Inspector, under the Public Health (London) Act, 1891, shall be sufficient for the purpose of the requirements in section 108(d) of that Act.

LOUGHBOROUGH SEWAGE DISPOSAL. — A Local Government Board inquiry was held at Loughborough Town-hall on Wednesday, the 13th inst., by Mr. Rienzi Walton, M.Inst.C.E., to consider an application from the Loughborough Town Council for sanction to a loan of 20,000*l.* for sewage disposal purposes. Mr. A. W. Cross, A.M.I.C.E., Borough Surveyor, explained the plans which had been prepared by him. It was proposed to construct an iron pipe intercepting sewer, to collect the sewage from the three present outfalls, and deliver it at the disposal site, where it will be raised a lift of about 20 ft. by centrifugal pumps. Destructors will be erected at the disposal site to destroy the dry ash refuse from the town, the heat being utilised to generate steam for pumping the sewage. The sewage would be purified by chemical precipitation in tanks on the constant-flow principle, followed by land filtration through 33 acres of suitable land. The mud will be air-dried and mixed with midden refuse and sold to neighbouring farmers. Mr. W. H. Radford, C.E., Nottingham, as Consulting Engineer to the Corporation, gave evidence in support of the scheme.

FOREIGN AND COLONIAL.

FRANCE.—The Académie des Beaux-Arts will elect a successor to M. Bonnassieux, the sculptor, to-day, July 30. The committee charged with the preparation of the list of candidates, after having at once laid aside the application of Madame Léon Berteaux, has presented in the first line M. Frémiet, who appears to have received the greatest number of votes. M. Allar is in the second, M. Marqueste in the third, M. Coutan in the fourth, and M. Janson in the fifth line.——The Minister of Public Industry has just appointed M. Frémiet to take part in the superior Council of the École des Beaux-Arts in place of M. Bonnassieux.——It is announced that the Government of the City of Paris have decided not to send any paintings or sculptures, acquired at the recent Salons, to the Chicago Exhibition, on account of the great risks of the voyage.——The Government are very soon going to make some freezing works for the slaughter-houses of the Villette, for the use of the troops, the expenses, amounting to 650,000 frs., are to be paid by the State and by the City of Paris. ——A fresco painting by MM. Paul Buffet and Waldmeir is soon to be inaugurated in the little church of the town of Avray, celebrated by the paintings of Corot. This fresco, which is in the form of a cupola, represents a procession of the relics of St. Nicolas.——Next month the new bridge will be opened which crosses the Seine between the parishes of Ivry and Charenton. The first stone was laid in 1890. This bridge, called the "Pont de Conflans," measures 170 mètres in length, and 12 mètres in width. It has three arches, resting on two piles and two abutments. The total cost has been 1,040,000 frs. ——On account of the cholera epidemic in the north-east suburbs of Paris, there is a question of entirely covering in all the canal works on the (almost) island of Gennevilliers. On the other hand, many of the inhabitants of the suburbs desire to have new canal works, with a fall to the sea.—— On the St. James'-road at Taillebourg (Charente Inférieure) a commemorative tablet in marble has been erected to the victory of Saint Louis.——M. le Docteur J. A. Martin, to whom we owe several important sanitary works, and who has organised the Hygienic Exhibitions, particularly the French department of the London Exhibition, has just been nominated Inspector-General of the Service de la Salubrité of the City of Paris.——The statue of Admiral Mouchey, who has recently died, will be erected on the Place de la Nature at Havre.——A committee is being formed for the erection of a statue of Sergent Lavayssieri, at Castelfranc (Lot). During the African wars he distinguished himself by the defence of Sidi-Brahim.——In the Church of Folgoët (Finisterre) an altar ornamented with bas-reliefs is shortly to be erected. The carvings are to represent the life and works of Mgr. Freppel, Bishop of Anger, who has lately died.——A subscription has just been opened for the erection of a statue to General Marbot. It is to be placed at Tulle (Corrèze).——The restoration of the choir arches in the Cathedral at Rouen is being carried out at the expense of the State under the direction of M. Sauvageot, architect of the Department of the Seine Inférieur.——The jury on the open competition for the construction of a theatre at Aix-les-Bains (Haute Savoie) have just awarded the first prize to M. Adolphe Cognet, architect, at Lyons; the second to M. Gaspard André, also of Lyons; and the third prize to M. Réné Boisseau, architect at Neuilly-sur-Seine. ——On the occasion of the centenary of the proclamation of the Republic in 1792, the city of Paris is going to organise a great procession on September 22. The procession will recall most of the principal features of the first Revolution.

BERLIN.—The following artists have received "large" gold medals for exhibits in the Salon:—Francisco de Pradilla (Madrid), Julian Falat (Berlin), both painters, and the sculptor, Professor Schilling (Dresden). Four painters and two sculptors of German nationality received "small" gold medals. Among the many artists who received "honourable mentions" are Messrs. Lambert & Stahl, of Stutgart, and Messrs. Zaar & Vahl, of Berlin, architectural firms of some repute. The Emperor awards the medals after having heard the recommendations of the jury, but he does not always follow their advice. The exhibition is to be closed on the 31st inst. to make room for the "Arts and Crafts" exhibition.——Dr. Meydenbauer, who has charge of the Royal "Photogrametrische Anstalt," has received a gold medal for distinguishing himself as a scientist. All archæological monuments in the country are being photographed under his superintendence, and then drawn in black and white according to his system.——After the great activity in the building trades during the last decade, it is not surprising to hear of a serious depression in many of the German towns. In Munich alone the number of buildings commenced in 1891 was only 1,685, whilst in 1890 the figure was 1,993. About 50,000*l.* of money less was spent in wages (according to the *Deutsche Bauzeitung*).——The question of erecting a second Opera House has at last been settled. The site has been bought, the funds raised, and the work is to be commenced next year. The site selected is near the Friederich-strasse station.——The two Court theatres will cost a deal of money for alterations this summer. The total estimate is 44,000*l.*, of which 25,000*l.* have been voted by the Government as owner of the buildings, and the rest given by the Crown as lessee. The protection of the public against risk of fire is the object of much of the outlay; new staircases in one of the buildings will alone cost 10,000*l.*

MISCELLANEOUS.

PROPOSED PRESENTATION TO SIR GEORGE BUCHANAN, F.R.S.—A movement is on foot for making a presentation to Sir George Buchanan, F.R.S., who has lately resigned the post of Medical Officer of the Local Government Board. A committee has been formed with a view to enabling those interested in public health throughout the country to give expression to the high estimation in which they hold the important work which Sir George Buchanan has done, and for affording some opportunity for the recognition of his conspicuous services in the cause of Preventive Medicine. It has been decided to open a subscription list (not to exceed two guineas from each contributor) with a view to presenting to Sir George some permanent memento of the esteem in which he snd his work are held. Dr. J. S. Bristowe is the Hon. Treasurer of the Fund, and the Hon. Secs. are Dr. W. H. Hamer, 69, Dartmouth Park-hill, London, N.W., and Dr. J. C. Thresh, Chelmsford, Essex, to whom contributions may be sent.

ENGLISH OAK: HIGH PRICES.—Messrs. Richardson (of Stamford) conducted a sale of oak in Burghley Park, on the 21st inst., when the following prices were realised:—Trees made 81*l.*, 80*l.*, 72*l.*, 66*l.*, 64*l.*; two, each 61*l.*, 50*l.*, 44*l.*, 32*l.*, 26*l.*, 24*l.*, and twelve more trees averaged 22*l.* each. Amongst the above, one brown oak, containing 150 ft., made 80*l.*

ELECTRIC LIGHTING.—The Vestry of St. Mary, Islington, held a special meeting on July 22, to consider a report from Professor Henry Robinson with reference to the electric lighting of their district, and it was unanimously resolved to apply for a Provisional Order under the Electric Lighting Acts.

CONSISTORY COURT OF LONDON.—Dr. Tristram, Q.C., Chancellor of the diocese, has granted a faculty authorising the removal to Ilford cemetery of any human remains that may be found upon clearing the site of old Farringdon Market. The market was sold in March last for 98,100*l.* to, we understand, Mr. J. H. Tubbs. Within its area, at the north-western corner, by the site of the former workhouse in Shoe-lane, lies what had been the paupers' burial ground of St. Andrew's, Holborn, wherein Chatterton was buried. He died on August 24, 1770, at a house on the western side of Brooke-street, Holborn-bars, that was pulled down in 1881.

THE PRESERVATION OF STONE.—M. Grimaud gives in the *Revue Pratique des Travaux Publics* some formulæ for coatings which will preserve stone. He states that oxide of zinc dissolved in a solution of the chloride has for a long time been used as a paint, and it serves as a base for the following cements:—1. Oxide of zinc, 20 kilogrammes; pulverised Lorraine cement-stone, 20 kilogrammes; sandstone, 10 kilogrammes. This cement must be tempered by a liquid composed of hydrochloric acid (22 deg. B), 10 litres; water, 5 litres; zinc, 3 kilogrammes; ammonium chloride, 0·5 kilogramme. 2. A cheaper cement may be obtained by mixing oxide of zinc, 10 kilogrammes; pulverised Lorraine cement-stone, 20 kilogrammes; sandstone, 5 kilogrammes; and yellow ochre, 0·4 kilogramme. This cement is tempered with the solution just given, diluted with 5 litres of water. 3. For soft stone a cement is made of oxide of zinc, 10 kilogrammes; Lorraine cement-stone, 30 kilogrammes; sandstone, 10 kilogrammes; yellow ochre, 0·3 kilogramme. (4) The following formula may also be used:—Zinc-white, 5 kilogrammes; plaster, 10 kilogrammes; Lorraine cement-stone, 10 kilogrammes; yellow ochre, 0·5 kilogramme. (5) If an extremely strong cement is desired it can be prepared of oxide of zinc, 10 kilogrammes, and pulverised quartz, 15 kilogrammes. For the three last-mentioned cements, the liquid given above is used, only 10 litres of water are added instead of 5 litres. These cements can be applied with a brush like a paint. Colours are said to give good results. The coating adheres perfectly to the stone, and gives it the appearance of a newly cut surface, and at the same time forms a protecting cover against the inclemency of the weather. The stone should be well cleaned before applying the cement paint, and, if necessary, two or more coats may be given.

THE WORSHIPFUL COMPANY OF CARPENTERS IN CONJUNCTION WITH THE COUNCIL OF KING'S COLLEGE. — The following students have gained prizes or certificates in Professor Banister Fletcher's classes. First year:—A. W. Makovisky, R. O. Feldon, F. Clark, Wearing H. T. Mather, W. H. Gurney, S. F. Trill. Second year:—Trimnell, Allberry, E. C. P. Monson, H. T. Adlard, A. G. Dixon, T. A. Watson, F. W. Bateman, A. A. Dixon. Evening [Classes:—S. Jeffree, E. C. P. Monson, J. R. Johnston, C. T. Aston, F. C. Higgins, T. C. Yates, H. M. Lawson, A. C. Long, F. Mayell, Woodward, E. Searchfield, H. C. Cregeen, H. Allberry, P. Ross.

THE COCKBURN ASSOCIATION AND THE IMPROVEMENT OF EDINBURGH.—The report to be submitted by the Council of the Cockburn Association to the annual meeting in October has just been issued. In it (according to the *Scotsman*) the Council say that since they presented their last annual report in July, 1891, the schemes of the various railway companies have been settled by Parliament, and "they are glad to report that since the formation of the Association seventeen years ago there has not been a year in which they have felt themselves less called upon to take steps to protect the amenity of the city than during the past year. It has rather been their pleasing duty to welcome several additions to the attractions of the city, to suggest improvements, and to mark the increased desire among all classes of the citizens to enhance the attractions of Edinburgh. The report proceeds to deal with the restored Old Hall and Argyle Tower in the Castle, and states that the Council are glad to be able to report that there is now a prospect of the hall and the tower being suitably adorned with relics of the past, and the designs of the restorer at an early date being carried out in their entirety. The whole question of the improvement of the Castle is one which demands the attention of the Government. The recently impending dissolution of Parliament prevented the Council from moving in the matter; but at the fitting time it will be their duty respect-

fully to impress on the Government the importance of executing upon the Castle buildings such structural alterations as may render them more worthy of the magnificent position which they occupy. Meanwhile the Council hail with satisfaction the removal of the unsightly drains on the south side of the rock—an improvement which they have frequently urged. As to the proposed alterations on the County Buildings, they are impressed with the importance of a suitable front being placed opposite George IV. Bridge; and they have appointed a committee to communicate with the Lord Provost and the Convener of the County Council on the subject."

THE MEDICAL DEPARTMENT OF THE LOCAL GOVERNMENT BOARD.—The following appointments have been made in the Local Government Board office to fill the vacancies consequent on Sir George Buchanan's resignation and Dr. Thorne Thorne's appointment as Principal Medical Officer:—Mr. W. H. Power to be Assistant Medical Officer, Dr. H. F. Parsons to be Second Assistant Medical Officer, and Dr. H. T. Bulstrode to be Medical Inspector.—*British Medical Journal.*

THE EAST END DWELLINGS COMPANY, LIMITED.—The Directors of this company have decided to declare an interim dividend, free of income tax, at the rate of 5*l.* per cent. per annum, fsr the half-year ending June 30 last. Building on the Cromer-street estate is being actively prosecuted, and plans are now under consideration for buildings on a new site in Mansford-street, Bethnal Green, which has been recently acquired by the company. Since the beginning of the year 601 new shares have been allotted, and the subscribed capital of the Company now stands at 92,520*l.*, leaving only 7,480*l.* of the original capital unsubscribed.

LEGAL.

HOARDING AND GANTRIES TO BUILDING WORKS:

ST. GEORGE'S VESTRY *v.* H. J. WILLIAMS.

A CASE of some importance to the building trade in London generally, in connexion with the right of enclosing building works with a hoarding above the gantry, was decided on July 22 at the Southwark Police-court.

It appears that Mr. H. J. Williams, builder, of Bermondsey-street, is erecting two buildings in the High-street, Borough, on the sites of Nos. 116–118 and 202. Following the usual custom, application was made to the St. George's Vestry for a licence for a gantry, hoarding, and scaffold, which licence was granted by the Vestry for a period of two months for No. 202 and three months for 116-118. The gantry was, it was stated, erected in a substantial manner over the public footway, the lower frontage under the gantry enclosed with a hoarding, and, following the usual practice, the upper portion of frontage was also enclosed by a hoarding to about 20 ft. in height, on which hoarding and returns the usual advertisements were placed. After a lapse of about two months, the St. George's Vestry gave Mr. Williams notice to entirely remove the hoarding above the gantry, but he declined to do so, signifying his intention of paying the Vestry's charges for advertisements, whereupon a summons was served by the Vestry and heard before Mr. Fenwick at the Southwark Police Court.

Mr. A. M. Hiscocks, the Vestry's Surveyor, appeared on their behalf, and Mr. George Elliot (barrister), instructed by Mr. Foulkes Jones, solicitor, appeared for Mr. Williams.

Mr. Hiscocks submitted that his Roads Committee objected to the hoarding above the gantry entirely, and insisted upon its removal, because they held it was not included in their licence to Mr. Williams; that it was dangerous; that it was unnecessary for the execution of the works; and that as regarded No. 202, the period of time stated in the licence had expired, and that as Mr. Williams had not complied with the order of the Vestry to remove the hoarding he asked for the full penalties and magistrate's order for immediate removal to be made.

Mr. George Elliott, on behalf of Mr. Williams, submitted that as the Vestry had granted licences for the scaffolding and hoarding or gantry, he was quite within his rights in erecting the hoarding above the gantries, because it was part of the same structure, and covered by the licences which he produced signed by Mr. Hiscocks; that the hoarding was absolutely necessary for the proper protection of the public from dust or pieces of brick and material and timber falling into the street below, and that to pull down old and rebuild new buildings with an open scaffolding would be throwing additional risks upon Mr. Williams and other builders, risks which were never intended by the Act; that the gantry was exactly similar to those in use all over London, and had been erected following the usual custom of the trade; that if it was the advertisements the Vestry objected to, Mr. Williams was perfectly willing to dispense with these, but considered it imperative that the site should be enclosed with a hoarding; that the hoarding was not in the slightest degree dangerous; and, with regard to the period of time stated in licence having expired, he called the magistrate's attention to the case of the City Corporation *v.* Brass, in connexion with the building of the new Post-office, St. Martin's-le-Grand, wherein it was held by the High Court that the Vestry had no power to limit the period of time for hoarding, which should run as long as the hoarding was absolutely necessary, and the Vestry had no power to prevent advertising.

In cross-examination Mr. Hiscocks said it was not the advertisements that were objected to, but his Committee wished the hoardings removed, and nothing else would satisfy them.

Photographs of the hoardings were produced in court, and submitted to the magistrate, who observed that it appeared to him the hoardings were the usual thing, and seemed more likely to benefit the neighbours than otherwise, in protecting them from the building operations, and that the hoardings did not seem too high, as they were much lower than the adjoining buildings. He would therefore suggest that Mr. Williams consent to put back the hoardings above the gantry a little, so as to project a short distance beyond the scaffolding for building the front, and allowing sufficient room for men to work. The hoardings to remain the same width and height as at present.

Mr. Williams consenting to this, the magistrate said he would make no order, the Vestry having failed in their case as to the removal of hoarding on licence having expired, and the case was adjourned for a week for the hoardings to be put back as agreed to by Mr. Williams, the advertisements to remain as before.—(*Communicated.*)

MEETINGS.

MONDAY, AUGUST 1.

Liverpool Engineering Society.—Excursion to the Dore and Chinley Railway, by permission of the Engineer, Mr. J. Somes Story.

TUESDAY, AUGUST 2.

Glasgow Architectural Association.—Mr. W. Fraser on "Domes and their Construction." 8 p.m.

WEDNESDAY, AUGUST 3.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting. 8.30 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

13,016.—HYDRAULIC CEMENT: *G. Williams.*—This invention relates to an improved process of making hydraulic cement, and consists in reducing carbonate of lime to a powder by steam, under pressure, produced from a solution of silicate of soda and water in suitable proportions, and adding to the powder so produced aluminia and silex and a thin paste of chloride of calcium, unslacked lime, and warm water, moulding it into convenient forms which are burned to a white heat, so as to produce a clinker, which is then ground to a fine condition.

13,983.—ARTIFICIAL STONE MOULDS: *W. N. Winter.*—The object of this invention is to obtain a more perfect security to the forms of the moulds or boxes applicable for use in the manufacture of artificial stone paving, and other like uses, during the operation of filling-in and "punning" the cements and other materials, thereby preventing any possible expansion or shifting of the sides or bottoms of the moulds during the consolidating process. To carry this into effect the inventor supplies metal screw clamps constructed of such form as to clasp the bottom, sides, and top edge of the moulds or boxes at different sections, thereby perfectly securing the desired figure of the mould required, either in plane or curved form.

6,242.—DOORS: *H. H. Leigh.*—This specification relates to improvements in the mechanism for securing doors and casements, so as to render it impossible for them to be broken open. It is claimed to be especially applicable to the doors and casements of dwelling-houses. This object is obtained by rather elaborate means, which can only be adequately understood by reference to the drawings annexed to the specification.

8,536.—SEWERS: *C. Netter.*—This patent refers to an improvement in the means for casing cavities or tiling-wells, sewers, or other drains, its object being to provide a simple, inexpensive, and practicable method for walling these shafts, whereby the work may be completed from the top downward, thus avoiding the danger of caving-in of the walls, as often happens in the case of well-shafts, the walls of which are often left in an imperfect or natural state until the well has been dug to a considerable depth beneath the surface. It is especially devised for use in circular cavities. The tiles used are, therefore, made in sections, having any desired surface area, the sections being concavo-convex in shape, and having the radii of their curves determined by the size of the cavity to be tiled. These sections are arranged in series surrounding and engaging the natural walls of the cavity, the sections being cemented at the joints. Each circumferential series is held in place against the natural walls of the cavity by the adjoining ring engaging the inner periphery of the sections, and crowding them out against the natural walls sufficiently tight to hold them securely in place until the joints between the sections are each cemented together, and dry and hard. In the meantime, other series of sections may be placed in position, and the work continued indefinitely.

9,077.—FIREPLACES AND GRATES: *L. Cresswell.*—This is an invention to be used in connexion with fireplaces in dwelling-houses for the prevention of fire from the escape of live coals, red-hot cinders, or the like. It consists essentially in the employment of a spring or other roller blind of asbestos cloth, or other fireproof flexible material.

9,191.—NAILS: *T. Durrans.*—This refers to an improvement in double-ended nails used for fencing, protective, joining, and other purposes. Its object is to provide an ample clearance for manipulation of the hammer, and consists essentially in making the nail with the first entering end and the second entering end in planes occupying an angular relation to each other, preferably from between about 120 degs. to 150 degs. This attains the further advantage of materially strengthening the junction of the opposite ends of the nail, and rendering the same less liable to be broken in use.

NEW APPLICATIONS FOR LETTERS PATENT.

July 11.—12,708, A. Hewitt, Hinged Windows, &c.—12,717, S. Johnson, Water-waste Preventer.—12,724, F. Mayo, Joining Earthenware Sewerage-pipes.

July 12.—12,746, W. Freeman, Automatic Flushing Apparatus for House-drains, Sewers, &c.—12,751, C. Candee, Door-locks.—12,756, W. Thompson, Artificial Stone and other Similar Building Materials.—12,767, A. Strusholm, Tile-presses.—12,817, T. Ely, Water-waste Preventer.—12,822, J. Glover & W. Stevens, Closing-valves for Water-closet Tanks.—12,827, R. Newton, Sewer-traps.

July 13.—12,843. A. Varah, Attaching and Adjusting Door-knobs.—12,854, J. Parker, Wood Mantels.—12,877, C. Coleman, Utilising the waste heat of Fires in Warming Rooms.

July 14.—12,906, W. Haddow and J. Hutchinson, Roses or Electrical Connexions for the Ceilings of Buildings or Structures.—12,912, J. Brown, Chimney-top.—12,922, C. Taylor, Planing or Shooting Mitres.—12,946, S. Heal and J. Heal, Chimney Cowls.

July 15.—13,032, C. Hedges, Sawing-stone.—13,044, J. Jones and H. Gibbs, Water-closet Basins.

July 16.—13,063, J. Parker, Ornamenting Joinery, &c.—13,074, J. Hall, Masons' and Builders' Scaffolding.

PROVISIONAL SPECIFICATIONS ACCEPTED.

7,715, J. Bulhmann and A. Moesle, Scaffolding Frame or Trestle, usable also for other purposes.—8,899, R. Wyatt, Water-waste Preventer for Water-closets, &c.—9,660, W. Jones, Water or other Closet Seats and Frames.—10,311, W. Wheeler, Water-waste Preventing Cisterns for Flushing Purposes.—10,319, S. Keeling and F. Smith, Water-closet Cistern-pulls.—10,578, J. Palmer, Sewer-gas Destructor.—10 626, A. Shill, Testing Drains and for Disinfecting Purposes.—10,718, C. Judson, Doors, Gate, Shutters, &c., the said improvements being specially applicable for use in connexion with elevators.—10,911, O. Hass, Hermetical Closure for Doors.—12,345, H. Cowell, Sash-fastener.

COMPLETE SPECIFICATIONS ACCEPTED.

(Open to Opposition for Two Months.)

15,471, J. Barlow, Dovetail Safety Window, with automatic action.—16,275, E. Taylor and H. Cliff, Door-stops, or devices for holding doors open.—2,364, G. Thompson, Nails.—11,212, W. James, Facia.—11,266, C. Raymond, Brick-pressing Machines.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

JULY 14.—By *Humbert, Son, & Flint* (at Orpington): Five plots of f. land, Orpington, Kent, 307*l.*

JULY 16.—By *Messrs. Cobb* (at Canterbury): Two enclosures of land, St. Lawrence, Kent, 23a. 1r. 1p., f., 1,300*l.*; two ditto, 9a. 3r. 38p., f., 820*l.*; a plot of freehold building land, 2r., 50*l.*

JULY 18.—By *G. E. Sworder & Sons*: "The Chantry," Bishop's Stortford, Herts, and 3a. 3r., f., 2,600*l.*—By *F. Varley*: No. 214, Tufnell-pk-rd., u.t. 64 yrs., g.r. 7*l.*, r. 36*l.*, 310*l.*—By *Reynolds & Eason*: 35 and 37, Scrutton-st., Finsbury, f., 995*l.*; f.g.r. of 7*l.*, New North-pl, reversion in 18 yrs., 300*l.*—By *Jones, Lang & Co.*: f.g.r. of 35*l.*, High-st., Wandsworth, reversion in 78 yrs., 90*l.*—By *Weatherall & Green*: f.g.r. of 100*l.*, East India Dock-rd., reversion in 26 yrs., 5,500*l.*; a plot of f. land, South Hill-rd., Bromley, 180*l.*; "Pentre Voelas," Potter's-rd., New Barnet, f., r. 35*l.*, 440*l.*; "Fairlight Villa," Woodville-rd., f., r. 30*l.*, 310*l.*; 1, 2, 4 to 8, Rowlett-st., Poplar, f., 1,745*l.*; f.g.r. of 3*l.*, Rowlett-st., reversion in 45 yrs., 70*l.*; 361, 383, and 365, East India Dock-rd., f., r. 94*l.*, 1,545*l.*; ginger beer factory, Wilson-st. Poplar, u.t. 48 yrs., g.r. 5*l.*, r. 50*l.*, 510*l.*; 4 to 10 (even), Wilson-st., u.t. 47 yrs., g.r. 8*l.*, 540*l.*; 100, Brunswick-rd., Bromley, u.t. 55 yrs., g.r. 4*l.* 10s., r. 40*l.*, 390*l.*; 65 to 75 odd, St. Leonard's-rd., u.t. 33 yrs., g.r. 20*l.*, 765*l.*; 99 to 105 odd, ditto, u.t. 47 yrs., g.r. 2*l.* 10s., 1,010*l.*; 177 to 183 and 201 to 213 odd, Grundy-st., u.t. 50 yrs., g.r. 29*l.* 10s., 1,620*l.*; "The Builders' Arms," Howard-st., u.t. 56 yrs., g.r. 17*l.*, r. 53*l.*, 540*l.*; 17, Howard-st., and 32, Ida-st., u.t. 56 yrs., g.r. 6*l.*, 400*l.*; 8, 9, and 10, Cook-st., u.t. 61 yrs., g.r. 1*l.* 15s., 440*l.*; 10 and 11, Orchard-pl., Blackwall, u.t. 25 yrs., g.r. 8*l.*, 85*l.*

JULY 19.—By *Ramsay & Co.*: 25 and 27, Culmore-rd., Old Kent-rd., u.t. 54 yrs., g.r. 15*l.*, 400*l.*; f.g.r. of 10*l.*, Brayards-rd., Peckham, u.t. 75 yrs., g.r. 6*l.* 11s., 45*l.*—By *F. Jolly & Co.*: 28, Shepherd-st., Spitalfields, f., 465*l.*; 17 and 18, Freeman-st., f., r. 75*l.* 8s., 865*l.*; 2 and 4, Palmer-st., f., r. 78*l.*, 870*l.*; 76, Petherton-rd., Islington, u.t. 57 yrs., g.r. 7*l.* 7s., r. 63*l.*, 590*l.*; 22, 24, and 26, Cullum-st., Stratford, u.t. 84 yrs., g.r. 13*l.* 10s., 210*l.* By *Debenham, Tewson, & Co*: "Monkhams," Woodford, and 131a. 0r. 7p., f., 29,000*l.*; enclosures of freehold land, 50a. 3r. 29p., f., 7,500*l.*; eight freehold cottages, r. 121*l.*, 1,070*l.*; 1 to 6, Roper-st., Eltham, f., r. 120*l.*, 1,260*l.*; 7 to 12, Roper-st., f., r. 120*l.*, 1,200*l.*

JULY 20.—By *H. Griffin*: 77 and 79, Speke-rd., Clapham, u.t. 72 yrs., g.r. 10*l.*, 360*l.*; 22 and 24, Knox-rd., Battersea, u.t. 86 yrs., g.r. 10*l.*, 300*l.*; 24 and 26, Brougham-st., u.t. 71 yrs., g.r. 4*l.*, 300*l.*; 55, Kilton-st., u.t. 74 yrs., g.r. 6*l.* 6s., 170*l.*—By *J. Hibbard & Sons*: 10, 11, and 12, Anderson's Walk, Lambeth, f., 700*l.*; 15 and 27, Vorley-rd., Highgate-hill, f., r. 53*l.*, 725*l.*—By *D. Smith, Son, & Oakley*: 8, 10, and 12, Plough-road, Battersea, f., r. 88*l.* 7s., 600*l.*; 22, 24, and 26, Plough-rd., f., r. 53*l.* 6s., 380*l.*; 1 to 11 and 14 to 22, Field-pl., f., r. 351*l.*, 1,885*l.*; 40 to 80 even, Hope-st., Battersea, f., r. 296*l.* 8s., 2,470*l.*; F.g.r. of 12*l.* Courland-grove, Clapham, reversion in 40 yrs., and f.g.r. of 7*l.*, Myrtle-ter., Wandsworth, ditto in 76 yrs., 450*l.*; F.g.r. of 8*l.*, Wardley-st., ditto in 76 yrs., 135*l.*—By *Hobson, Richards, & Co.*: 136, Well-

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premium.	Designs to be delivered.
*Sanatorium, Labourers' Dwellings, &c. ..	Bexhill Loc. Bd.....	10*l.* 5*l.*.....	Sept. 1
*Drainage and Sewerage Disposal Schemes	Mytholmroyd L. B. ..	60*l.* 25*l.* and 15*l.*	Oct. 1
*Garden Pavilion	Bournemouth Corp. ..	50*l.*	Oct. 15

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*New College Buildings, &c. Bangor	North Wales Training College.....	R. Grierson	July 30
*Roadmaking Works.....	Southend Local Board	Peter Dodd	Aug. 2
*Roadmaking Work	Lewisham Bd. of Wks	*Official*	do.
*Cottage and Office, Cartsheds, &c.....	do.	do.	do.
Limestone and Road Metal	Mountain Ash (Glam.) Local Board	do.	do.
School Buildings, Thomas-street	Sunderland School Bd.	do.	do.
Warehouses, Union Quay	Tynemouth Corp.	J. F. Smillie.....	do.
Street Formation Works	South Blyth Loc. Bd.	Wm. Winship.....	do.
Hotel, Aber, Caerphilly.	.....	E. W. M. Corbett	do.
Thirteen Houses and Street, Woodhouse, Sheffield	Truswell's Brewery Co. Lim.	J. T. Wheen.....	do.
Sewerage Works, Market Place, &c.....	Plymouth Corp.....	G. D. Bellamy.....	do.
Rechabite Hall, New Tredegar	.....	H. Sketch	do.
Farm Buildings, Auchnagairn, Regulas, Elgin, N.B.	.....	C. C. Doig.....	do.
Three Dwelling-houses, Farsley, Leeds ..	.....	J. B. Greaves	Aug. 3
Public Hall and Additions to Municipal Buildings	Winchester Twn Coun.	J. B. Colson	do.
Workhouse Building and Bathrooms....	West Ashford Union..	*Official*	do.
Labourers' Cottages, &c. Collogatt, Landulph	Duchy of Cornwall ..	S. Hooper	Aug. 4
*Pipe Sewers, &c. &c.....	Hendon Loc. Bd.	S. S. Grimley	do.
Wooden Swing Bridge, Sod House Lock, Brough, Yorks.....	.....	W. Kempley	Aug. 5
*Facing Bricks.....	Birmingham New General Hospital.....	W. Henman.....	Aug. 6
Schools, Houses, Walls, &c. High Spen, co. Durham	Chopwell (Newcastle) School Board.....	S. Oswald & Son.....	do.
*Sea Defence Works	Worthing T. C.	R. B. Grantham & Son	Aug. 8
Sewering, Levelling, Channelling, &c. certain Streets.....	Harrogate Corp.....	Saml. Stead	do.
Class Room, &c. Sunday Schools, Yeovil..	Rev. J. D. Thomas....	.....	do.
Forming and Paving Passages and Streets	Warrington Corp.	T. Longdin	do.
*Gas Meters	Bermondsey Vestry ..	*Official*	do.
*Earthenware Sewer Pipes	Belfast Corporation ..	do.	Aug. 9
*Broken Granite.....	Staines Local Board ..	do.	do.
*Wood Paving	Willesden Local Board	O. Claude Robson	do.
*Painting Works at Infirmary	Paddington Guardians	A. & C. Harston.....	do.
Baptist Church and School, Ogmore Vale, Glam.	.....	Allan J. Waters.....	do.

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*Broken Granite and Flints	Barking Town Loc Bd.	C. J. Dawson	Aug. 9
Church, Shaldon, near Teignmouth	Rev. R. M. MarshDunn	Edmund Sedding	do.
*Fire Station, &c.	Nuneaton Local Board	J. S. Pickering	Aug. 10
*New Station at Llandyssil	G. W. R. Co.	*Official*	do.
*Engine Shed, &c. Swansea.....	do.	do.	do.
*New Station at Cheltenham.....	do.	do.	do.
*Earthwork, Ballasting, &c, for Station Yard, Cheltenham	do.	do.	do.
*New Station Buildings, &c. Goring	do.	do.	do.
*Road Works	Ystradyfodwg Loc. Bd.	do.	Aug. 11
Offices, Additions to Warehouse, Truro ..	Western Counties Agric. Co-op. Assoc. (Lim.)	W. T. Martyn Mear ..	&c.
*Painting and Repairs, &c. Workhouse, &c.	St. George-in-the-East Guar.	Wilson, Son, & Aldwinckle	Aug. 12
*Gates and Railings, Victoria Park	Bristol U.S.A.....	*Official*.....	Aug. 17
*Alterations and Additions to Laundry ..	Poplar Union	—Clarkson	do.
*Beam Engines, Abbey Mills Pumping Station	LondonCountyCouncil	*Official*	Sept. 27
*External Painting, Chatham Barracks ..	War Department	do.	No date.
*Paving Works	Colne U.S.A.	do.	do.
*Building Materials	Directors of Convict Prison	do.	do.
*Tower, Spire, Roof, &c. Church, near Shrewsbury	.....	C. J. Ferguson.....	do.
Methodist Church and Schools, Bedlington Newcastle-on-Tyne	.....	Davidson & Bendle ..	do.
Causeway, Kippax, Leeds	.....	Gough & Adams	do.
Long Stone Wall, Trentham-road, Longton, Staffs.....	....	J. W. Wardle	do.
Detached Residence, Gledhow, Leeds	.....	W. S. Braithwaite....	do.
Four Through Houses, Altofts, Normanton	.....	T. B. Wilson	do.
Nurses' Home, Carlisle	.....	C. J. Ferguson.....	do.
Coach-house and Stables, Radyr	.....	Richards & Gethin....	do.
Villa Residence, Swaine Hill, Yeadon, Yorks	.....	Harold Chippendale ..	do.
Rebuilding "Bacchus" Inn, Warehouses, &c. Newcastle-on-Tyne	G. C. Charlton.....	Arthur Stockwell	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*Clerk of Works	Birmingham New General Hospital....	.....	Aug. 6
*Engineer, Architect, and Surveyor	Norwich Corp.....	600*l.*	Aug. 16

Those marked with an Asterisk (*) are advertised in this Number. *Competitions, p.* iv. *Contracts, pp.* iv., vi., & viii. *Public Appointments, p.* xviii.

st., Hackney, u.t. 58 yrs., g.r. 1*l.* 11s., r. 21*l.*, 320*l.*—By *W. Hallett & Co.*: 3 and 6, Porteus-rd., Maida Hill, u.t. 46 yrs., g.r. 18*l.*, 1,000*l.*

JULY 21.—By *G. H. Masterman & Co.*: "Stafford Villa," Church-rd, Sutton, f., 75*5l.*; A plot of f. land, 195*l.*; a plot of f. land Cheam-rd., 790*l.*—By *Newbon & Co.*: 5, Devonshire-st., Islington, f., 850*l.*; 33, Chapel-st., Pentonville, u.t. 35 yrs., g.r. 35*l.*, r. 60*l.*, 110*l.*; 3 to 17 (odd), Gough-st., Poplar, u.t. 40 yrs., g.r. 18*l.* 3s. 8d., 1,670*l.*; 16 and 18, Gough-st., u.t. 40 yrs., g.r. 4*l.* 11s., 450*l.*; 1a, 17 and 18, Bloomsbury-rd., u.t. 50 yrs., g.r. 6*l.*, 400*l.*; 35a, Gibson-sq., Islington, u.t. 35 yrs., g.r. 2*l.*, r. 45*l.*, 430*l.*; 18 and 19, Grafton-pl., Euston-rd., u.t. 16 yrs., g.r. 25*l.* 4s., r. 60*l.*, 130*l.*; 1 and 2, Union-ter., Merton, u.t. 11 yrs., g.r. 18*l.*, r. 48*l.*, 50*l.*; Three f. cottages, King's-rd., Finchley, r. 41*l.* 16s., 590*l.*—By *Gilder Bros.*: 148 and 150, Lots-rd., Chelsea, u.t. 68 yrs., g.r. 13*l.*, 650*l.*—By *H. Gibson*: 8, 9, and 10, Chesnut-rd., Norwood, u.t. 79 yrs., g.r. 33*l.*, r. 150*l.*, 735*l.*—By *Messrs. Aldridge*: 50, Croydon-rd., Anerley, f., 700*l.*; a plot of f. land, Apsley-rd., Norwood, 40*l.*; 60 and 62, Nelson-row, Clapham, f., 515*l.*—By *H. J. Bliss & Sons*: 90 and 92, Leader-st., Chelsea, u.t. 13 yrs., g.r. 1*l.*, 200*l.*; three plots of freehold land, Albert-rd., Leyton, 84*l.*—By *F. Perks*: No. 83, Palace-rd., Fulham, f.r. 34*l.*, 475*l.*; f.g.r. of 76*l.*, Rosendale-rd., Dulwich, reversion in 86 yrs., 1,935*l.*; f.g.r. of 32*l.* 10s., Copplestone-pl., Wandsworth, reversion in 85 yrs., 705*l.*; f.g.r. of 12*l.*, Fulham Palace-rd., reversion in 74 yrs., 300*l.*; f.g.r. of 33*l.* 15s., Claybrook-rd., reversion in 74 yrs, 815*l.*—By *Stimson & Sons*: f.g.r. of 20*l.*, Lower-rd., Deptford, reversion in 68 yrs., 500*l.*; f.g.r. of 4*l.*, Oxford-st., Whitechapel, reversion in 15 yrs., 510*l.*; 49 and 51, Oxford-st., f., 1,230*l.*; 43, Ida-st., East India Dock-rd., f., r. 15*l.* 12s., 110*l.*; a plot of f. land, Devonshire-rd., Forest Hill, 50*l.*; 29, Hatcham Park-rd., New Cross, u.t. 59 yrs., g.r. 4*l.*, r. 28*l.*, 345*l.*; 15 and 19, St. James's-rd., u.t. 73 yrs., g.r. 14*l.* 14s., 650*l.*; 85, Lewisham High-rd., u.t. 37 yrs., g.r. 5*l.* 15s. 6d., 400*l.*; 116 and 118, Amersham-vale, u.t. 51 yrs., g.r. 6*l.*, r. 65*l.*, 450*l.*; 36, Arthur-st., Deptford, u.t., 53 yrs., g.r. 4*l.*, 280*l.*; 1 and 2, Wavendon-villas, 50 and 51, Wottonrd.; 15, Abinger-rd., u.t. 49 yrs., g.r. 4*l.* 2s., 1,000*l.*; 8 to 20 even, Napier-st., u.t. 53 yrs., g.r. 12*l.* 14s., 990*l.*; 15 to 22, Dussek-ter., u.t. 55 yrs., g.r. 14*l.*, 1,200*l.*—By *Worsfold & Hayward* (at Dover): "Hougham Lodge Farm, near Dover, f., 40a. 2r. 15p., 1,475*l.*; "Hawkinge Hall Farm," near Folkestone, 89a. 3r. 39p, f., 1,950*l.*

JULY 22.—By *J. A. & W. Tharp*: 45, Caroline-st., Stepney, and 7, Giles'-pl., f., r. 32*l.* 10s., 225*l.*; 36A and 38, Caroline-st., f., r. 33*l.* 16s., 250*l.*—By *E. & S. Smith*: 31, Nile-st., Hoxton, u.t. 930 yrs., no g.r., 335*l.*; 4, Whitley-rd., Holloway, u.t. 71 yrs., g.r. 5*l.* 5s., r. 30*l.*, 225*l.*—By *Flood & Sons*: 13, Denbigh-ter., Bayswater, u.t. 51 yrs., g.r. 6*l.* 6s., r. 30*l.*, 250*l.*—By *Fuller, Horsey, Sons, & Cassell*: 6, Vine-st., Minories, in perpetuity, g.r. 3*l.* 1s. 2d., r. 56*l.*, fine every 14 yrs., 21*l.* 8s. 2d., 710*l.*—By *Charles & Tubbs*: 15 and 17, Acton-st., King's-cross, u.t. 48 yrs., g.r. 25*l.* 4s., r. 78*l.*, 630*l.*—By *W. J. Newell*: 7 to 14, Gunning-st., Plumstead, u.t. 63 yrs., g.r. 22*l.*, 1,030*l.*; 87 and 89, Loampit-vale, Lewisham, f., r. 66*l.* 8s., 663*l.*—By *Debenham, Tewson & Co.*: 5, West Chapel-st., Mayfair, u.t. 848 yrs., g.r. 6s. 6d., r. 145*l.*, 1,625*l.* By *Osborn & Mercer*: An enclosure of freehold land, Chertsey, 1a. 1r. 17p., 310*l.*—By *Baker & Son*: No. 436, Hackney-rd., u.t. 10 yrs., g.r. 40*l.*, r. 60*l.*, 32*l.*; 50, Smith-st., Stepney-green, u.t. 5 yrs., g.r. 30*l.*, r. 41*l.* 10s., 6*l.*; 7 to 13 (odd), Hartland-rd., Stratford, u.t. 87 yrs., g.r. 20*l.*, 496*l.*; 33, Catlin-st., Bermondsey, u.t. 55 yrs., g.r. 5*l.*, 225*l.*; 25 to 30, King-st., u.t. 42 yrs., g.r. 22*l.*, 325*l.*; 82, Barkworth-rd., u.t. 85 yrs., g.r. 5*l.*, 180*l.*; 20, Barlborough-st., New Cross, u.t. 63 yrs., g.r. 4*l.* 15s., 230*l.*; 63, 65, and 67, East Surrey-grove, Peckham, u.t. 69 yrs, g.r. 12*l.*, 540*l.*; 12 and 14, Costa-st., u.t. 34 yrs., g.r. 7*l.*, 180*l.*; 35, Leyton-sq., Old Kent-rd., u.t. 88 yrs., g.r. 9*l.* 9s., 81*l.*; 112, 114, and 116, Gloucester-rd., Camberwell, u.t. 50 yrs., g.r. 18*l.*, 485*l.*; 10, 12, and 14, Matham-grove, Dulwich, u.t. 87 yrs., g.r. 19*l.* 10s., r. 84*l.*, 705*l.*; 74, Acre-lane, Brixton, u.t. 82 yrs., g.r. 12*l.* 12s., r. 60*l.*, 480*l.*; 4, Bromfelda-rd., Clapham, u.t. 70 yrs., g.r. 4*l.*, 280*l.*; 14, Selby Villas, Anerley, u.t. 71 yrs., g.r. 12*l.*, 285*l.*; 1, 2, and 3, Carshalton-rd., Sutton, u.t. 87 yrs., g.r. 12*l.*, 535*l.*; 34 to 41, Fountain-rd., Mitcham, u.t. 88 yr., g.r. 22*l.*, 320*l.*; 2, Lime-villas, Malden, u.t. 68 yrs, g.r. 6*l.* 10s., 235*l.*; 8, 9, and 10, Clyde-ter., Leyton, u.t. 86 yrs., g.r. 9*l.*, r. 72*l.*, 385*l.*; "Avoca Lodge," Bush Hill Park, Enfield, f., r. 65*l.*, 790*l.*; "Ivy House," West Cowes, f., r. 40*l.*, 495*l.*; Freehold Warehouse, Medina-rd., 212*l.*; Freehold Enclosure of 19a. 0r. 37p., Harrow-on-the-Hill, 950*l.*

[*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g r. for ground-rent; r. for rent; f. for freehold; c. for copyhold: l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd, for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.]

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G. ton	9/0/0	0/0 0
Teak, E.I... load	9/10/0	15/0/0
Sequoia, U.S. ft. cn.	2/3	3/0
Ash, Canada load	2/10/0	4/0/0
Birch, do.	3/5/0	4/10/0
Elm, do.	3/10/0	4/15/0
Fir, Dantzic, &c.	1/10/0	3/10/0
Oak, do.	3/0/0	5/5/0
Canada.....	5/10/0	7/0/0
Pine, Canada red	2/10/0	3/10/0
Do, yellow	2/10/0	5/0/0
Lath, D'ntzic, fath	5/0/0	6/0/0
St. Petersburg	5/0/0	7/0/0
Deals, Finland		
2nd & 1st std 100	7/10/0	9/10 0
Do, 4th & 3rd..	7/0/0	8/0/0
Do. Riga	6/10/0	8/0/0
St. Petersburg, 1st yellow ..	10/10/0	14/10/0
Do. 2nd yellow	8/0/0	9/10/0
Do. white	7/10/0	10/0/0
Swedish	7/0/0	15/10/0
White Sea	8/0/0	17/0/0
Canada, Pine 1st	20/0/0	26/0/0
Do. do. 2nd....	14/10/0	16/0/0
Do. do. 3rd, &c.	8/0/0	10/0/0
Do. Spruce. 1st	8/10/0	11/0/0
Do. do. 3rd & 2nd.....	6/15/0	8/0/0
New Brunswick	7/0/0	7/10/0
Battens, all kinds	3/10/0	15/10/0
Flooring Boards, sq., 1 in. prep. 1st	0/8/0	0/13 6
Do. 2nd.....	0/7/0	0/10/6
Other qualities	0/3/6	0/8 0
Cedar, Cuba ..ft.	/3½	/4½
Honduras, &c.	/3½	/4
Mahogany, Cuba.	/4½	/6½
St. Domingo, cargo av	/4½	2/0
Mexican do. do	/4	/5
Tobasco do. do	/5½	/7
Honduras do..	/5½	/6½
Box, Turkey ton	4/0/0	13/0/0
Rose, Rio.....	10/0/0	20/0/0
Bahia	9/0/0	18/0/0
Satin, St. Domingo ..... ft.	0/0/3	0/1/3

TIMBER (*continued*).		
Satin, Porto Rico	0/0/8	0/1/6
Walnut, Italian..	0/0/3½	0/0/7
METALS.		
IRON—Pig, in Scotland .....ton	2/2/1	0 0 0
Bar, Welsh, in London.....	5/17/6	6/0/0
Do. do. at works in Wales	5/7/6	5/10/0
Do, Staffordshire, in London	6/5/0	6/15/0
COPPER—British, cake and ingot	48/0/0	48 10/0
Best selected ..	49/0/0	49/10/0
Sheets, strong..	56 10/0	0/0/0
Chili, bars	45/1/3	45 8 9
YELLOW METAL lb.	0/0/5½	0/0/5½
LEAD — Pig, Spanish ....ton	10 7/6	10/10/0
English, com. brands	10/12 6	10/15/0
Sheet, English, 3 lbs. per sq. ft. and upwards ..	12/0/0	0/0/0
Pipe	12/10/0	0/0/0
ZINC — English sheet .....ton	25/15/0	26 0/0
Vieille Montagne.....	26/5/0	0/0/0
TIN—Straits	94/15 0	95 5/0
Australian	95/10/0	96/0 0
English Ingots.	98/10/0	99/0/0
OILS.		
Linseed .....ton	18/5/0	18.7.6
Cocoanut, Cochin	24/15/0	0/0/0
Do. Ceylon	22/0/0	0/0 0
Palm, Lagos	22/5/0	22/10/0
Rapeseed, English pale	24/10/0	25/0/0
Do. brown	23/0/0	0/0/0
Cottonseed ref...	19/7/6	19/10/0
Oleine	21/10/0	22/10/0
Lubricating, U.S.	4/0/0	5/0/0
Do. refined	5/10/0	12/0/0
TAR—Stockholm barrel	0/19/0	0/0/0
Archangel	0/12/6	0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 12 *noon on Thursdays.*]

BELVOIR (Leicestershire).—Accepted for supplying warm-air heating apparatus to Belvoir Castle, for his Grace the Duke of Rutland:—
John Grundy £100 0 0

BISLEY.—For erecting two pairs of semi-detached villas at Bisley Mr. R. G. Hammond, architect, Regent's Park, N.W.:—

	A.	B.	Credit Old Material.	Total.
Harris	£831 ..	£904	£30	£1,695
Dinell	803 ..	883	10	1,676
Winsiade	797 ..	883	20	1,660
Norris	760 ..	890	15	1,635
Peters	780 ..	865	15	1,630
Spooner.....	775 ..	853	38	1,590
Nesmyth, Chertsey* ..	760 ..	840	17	1,583

* Accepted.

BLAINA (Mon.).—For the erection of a Wesleyan Chapel and Schoolsat Blaina. Mr. F. R. Bates, architect, Newport, Mon.:—

H. Welsh	£2,430	W. Jones & Son	£2,200
C. Lock	2,335	H. Parfitt, Pontewydd*	2,150
T. G. Diamond.....	2,310	* Accepted.	

BRIDGEND (Glamorgan).—Accepted for the erection of an infirmary block and workshops at Parc Gwellt Asylum, for the Glamorganshire County Council. Messrs. Giles, Gough, & Trollope, architects, 28, Craven-street, Charing Cross, London. Quantities by Mr. C. H. Goode:—
Henry Willcock, Wolverhampton £16,263 0 0

CAERPHILLY.—For erecting a house at Caerphilly. Messrs. Bruton & Williams, architects, Cardiff:—

A. Berridge	£1,800 0 0	Turner & Sons.....	£1,575 0 0
Wright	1,641 9 4	E. T. Hatherly, Bristol (accepted)	1,497 0
D. C. Jones & Co. ..	1,579 0 0		

CHELSFIELD (Kent).—For erecting detached house at Pratt's Bottom, for Mrs. Cheal. Mr. St. Pierre Harris, architect and surveyor, 1, Basinghall-street, E.C.:—

F. Wood.....	£697	Stebbings & Pannett.....	£585
R. A. Lowe	647	T. Knight*	529

* Withdrawn owing to error.

CHELMSFORD.—For building a pair of villa residences, in the Market-road, Chelmsford. Mr. R. Mawhood, architect, Chelmsford:—

Choat & Son.....	£555	E. West*	£473
W. Fincham.....	545	* Accepted.	

[All of Chelmsford.]

CHELMSFORD.—For a cottage, to be built in Broomfield, Essex. Mr. R. Mawhood, architect:—

G. Milbank	£249	J. Norrington, Broomfield*	£195
J. Elgie	230	* Accepted.	

EDMONTON.—For erecting new latrines at St. James's Schools, Upper Edmonton. Mr. E. B. Ellis, surveyor, 9, Fenchurch-street, E.C.:—

G. L. Wilson & Co.....	£129	Lacey	£80
H. Knight & Son.....	93		

GREAT BADDOW.—For erecting a cottage, to be built in Great Baddow, Essex. Mr. R. Mawhood, architect:—

G. Linn.....	£230	J. Linn, Great Baddow*	£193
		* Accepted.	

JARROW-ON-TYNE.—For the extension of Hebburn New Town board school, for the Hedworth, Monkton, and Jarrow (U.D.) School Board. Quantities by Mr. J. Savage, Newcastle:—

Thos. Lumsden.....	£3,400 0 0	J. Storar & Son	£2,785 0 0
J. Brown & Company	3,154 2 9	Cowper & Henderson,	
J. Munro	2,855 10 0	Jarrow (accepted)	2,741 0 0

KINGSLAND (Herefordshire). — Accepted for alterations and additions to farmhouse and premises to store-house, Cobrash, for Mrs. Vaughan :—
A. Millward £495 0 0

KNUTSFORD.—For the erection of school buildings, for the Right Hon. Lord Egerton of Tatton. Messrs. Preston & Vaughan, architects, Diocesan-chambers, Manchester :—

J. Broadhurst	£3,700	M. Stone	£3,385
R. Beckett	3,487	Jas. Hamilton	3,359
I. Massey	3,485	J. & J. Beswick	3,350
C. Wallworth	3,400	W. H. & H. C. Brown, Stockport (accepted)	3,290
W. Brown & Son	3,397		

LEEDS.—Accepted for the erection of stables, &c., Alma-road, Headingley, for Mr. Joseph Nicholson. Mr. T. Butler Wilson, architect, 12, East-parade, Leeds :—

Masons and Bricklayers—William Wilson & Son	£1,100 0 0
Joiners—William Nicholson & Son	597 15 6
Plumbers—H. Braithwaite & Co.	133 0 0
Plasterers—J. P. Mountain & Son	126 13 8
Slaters—John Atkinson & Son	83 2 6

[All of Leeds.]

LEEDS.—Accepted for alterations and additions to Wheatfield Lodge, Headingley, Leeds, for Mr. J. Nicholson. Mr. T. Butler Wilson, architect, Leeds :—

Mason and Brickwork—W. Wilson	£800 0 0
Joiner—J. H. Thorp	549 0 0
Slaters—J. Atkinson & Son	33 9 0
Plumbers—H. Braithwaite & Co.	262 17 6

LEOMINSTER.—Accepted for general repairs and alterations to residence and business premises, Corn-square, recently destroyed by fire, for Mr. Jno. Tertius Southall :—
H. Millward £850 0 0

LEYTON.—For paving and kerbing, for the Leyton Local Board. Mr. William Dawson, A.M.Inst.C.E., Surveyor :—

Public Streets.

W. Farrar	£9,808 0 0	Nowell & Robson	£9,125 5 10
J. Biggs	9,781 6 3	Mowlem & Co.	8,969 0 0
J. Bentley	9,224 0 0	W. Griffiths*	8,718 0 0

*Accepted.

[Surveyor's estimate, £8,887.]

Private Streets.

Lloyd & Powell	£4,258 9 6	Mowlem & Co.	£3,522 0 0
W. Farrar	3,853 0 0	J. Bentley	3,483 10 0
J. Biggs	3,809 12 3	W. Griffiths*	3,411 0 0
Nowell & Robson	3,536 11 8		

*Accepted.

[Surveyor's estimate, £3,500.]

Private Street Drainage and Road-making.

W. Griffiths	£1,174 0 0	Lloyd & Powell	£1,089 0 9
J. Biggs	1,143 9 3	Jesse Jackson, Leyton (accepted)	1,670 0 0
J. Bentley	1,111 16 7		

[Surveyor's estimate, £1,080.]

LICHFIELD.—For the erection of an industrial (truant) school, for the Joint Committee of the School Boards of Burton-on-Trent, Walsall, and West Bromwich. Mr. R. Stevenson, architect, Imperial Chambers, 35, High-street, Burton-on-Trent. Quantities by Messrs. W. H. Barber & Son, 22, Buckingham-street, Adelphi, London, W.C. :—

J. Harley & Sons	£14,582 0 0	R. M. Huges	£12,233 0 0
Wood & Sons	14,377 6 9	W. A. Stevenson	11,949 0 0
J. Mallin	14,122 0 0	Thos. Lowe & Sons, Burton*	11,605 0 0
J. Varlow	12,895 0 0	H. Vickers	11,480 0 0
J. & C. Hunter	12,680 0 0		
Geo. Hodges	12,595 0 0		

*Accepted.

LISWORNEY.—For the restoration of Lisworney Church. Messrs. Bruton & Williams, architects, Cardiff :—

P. Gaylard	£1,375 0	A. Berridge	£1,203 0
J. Haines	1,260 0	Davies & George	855 10

LONDON.—For constructing embankment-wall at Fulham, facing the river Thames, for the Vestry of the parish of Fulham. Mr. James P. Norrington, C.E., Surveyor :—

Jas. Dickson	£17,980 0	B. Cooke & Co.	£13,500 0
C. Wase	15,300 0	Jos. Mears	12,800 0
Aviss & Co.	15,200 0	C. E. Daniel	12,770 0
Lloyd & Powell	14,373 10	W. Neave & Son	12,761 0
J. Biggs	14,000 0		

LONDON.—For the erection of a warehouse, Amber-street, Stratford, for Mr. J. R. Roberts. Mr. J. Kingwell Cole, architect. Quantities by Mr. Edward S. Mansergh, 28, Mount-street, W. :—

Perry & Co.	£1,588	B. E. Nightingale	£1,423
J. Morter	1,500	S. Chafen	1,399
A. E. Faulkner	1,475	W. J. Hack	1,384
Geo. Neal	1,474	W. J. Maddison	1,300
Reed	1,468	T. Osborn & Sons	1,290
Harris & Wardrop	1,466		

LONDON.—For erecting a school in Ellerslie-road, Uxbridge-road, Shepherd's-bush, to provide accommodation for 1,200 children, for the School Board for London. Mr. T. J. Bailey, Architect :—

		If brickwork be built in cement, add.
J. Shillitoe & Son	£19,600	£550 0
J. Grover & Son	17,735	435 0
Stimpson & Co.	17,262	425 0
H. L. Holloway	17,062	437 0
Holloway Bros.	16,752	440 0
W. Oldrey & Co.	16,522	261 0
D. Charteris	16,525	437 0
C. Wall	16,321	436 0
Kirk & Randall	15,810	436 0
C. Cox	15,756	393 0
W. Shurman	15,343	349 0
W. Brass & Son	15,016	305 0
W. Shepherd, Bermondsey New-road	*14,841	*305 10

* Recommended by the Works Committee for acceptance.

LONDON.—For the enlargement of the Mailstone-street School, Bethnal-green, by 796 places, and for other work, for the School Board for London. Mr. T. J. Bailey, Architect :—

		If brickwork be built in cement, add
Killby & Gayford	£17 119	£260
Clarke & Bracey	16,576	260
Atherton & Latta	16,560	260
J. Longley & Co.	16,451	268
D. Charteris	16,397	270
Grover & Son	16,310	269
S. & W. Pattinson	15,217	239
G. L. S. Williams	15,117	249
C. Cox, Hackney*	14,542	238

* Recommended by the Works Committee for acceptance.

LONDON.—For the enlargement of the Haselrigge-road School, Clapham, by 372 places, and for other works, for the School Board for London. Mr. T. J. Bailey, Architect :—

		If brickwork be built in cement, add.
Hart Bros.	£5,420	£81
B. E. Nightingale	5,102	95
E. Lawrance & Sons	4,779	70
Holloway Bros.	4,556	71
W. Downs	4,506	60
Holliday & Greenwood	4,124	66
Co-operative Builders, Lim., Brixton	*3,836	*53

* Recommended by the Works Committee for acceptance.

LONDON.—For the enlargement of the Prospect-terrace School, Grays Inn-road, by 196 places, and also for providing a playground for the Girls' department on the roof of the building, for the School Board for London. Mr. T. J. Bailey, Architect :—

		If brickwork be built in cement, add.
E. Lawrance & Son	£1,772	£35
J. Smith & Sons	1,642	33
B. E. Nightingale	1,624	46
J. & M. Patrick	1,583	35
Willmott & Sons	1,483	32
F. J. Coxhead	1,470	39
W. H. Gaze	*1,341	*33

* Recommended by the Works Committee for acceptance.

LONDON.—For the enlargement of the Harrow-road School, Paddington, by 425 places; and for other works, for the School Board for London. Mr. T. J. Bailey, Architect :—

D. Charteris*	£7,280 0 0

* Recommended by the Works Committee for acceptance.

LONDON.—For enlarging the infants' department of the Fleet-road School, Hampstead, by 116 places, and for other works, for the School Board for London. Mr. T. J. Bailey, Architect :—

		If brickwork be built in cement, add.
Clarke & Bracey	£3,289	£60
E. Lawrance & Sons	3,085	53
B. E. Nightingale	2,993	68
Willmott & Sons	2,592	59
G. S. S. Williams & Son, Richmond-street, Barnsbury	*2,595	*53

* Recommended by the Works Committee for acceptance.

LONDON.—For the enlargement of the Amberley-road School, Harrow-road, by 394 places, and for other works, for the School Board for London. Mr. T. J. Bailey, Architect :—

		If brickwork be built in cement, add.
J. Longley & Co.	£7,818	£120
Kirk & Randall	7,739	120
Holliday & Greenwood	7,697	125
E. Lawrance & Sons	7,085	120
S. & W. Pattinson	6,427	117
D. Charteris	6,226	190
C. Cox, St. George's Works, Ash-grove, Hackney	*6,172	*120

* Recommended by the Works Committee for acceptance.

LONDON.—For the erection of a school in Eardley-road, Streatham, for the School Board for London. Mr. T. J. Bailey, Architect (Two competitions) :—

First Competition.

		If brickwork be built in cement, add.
John Shillitoe & Son	£17,873	£340
Lathey Bros.	16,555	230
J. T. Chappell	16,280	160
Holloway Bros.	16,240	236

Second Competition.

S. J. Gerrard	£19,990	£295
Hart Bros.	19,021	223
Oldrey & Co.	17,282	170
Jas. Chappell	17,280	170
E. Lawrance & Sons	16,599	255
Stimpson & Co.	16,555	297
Holloway Bros.	16,240	236
D. Charteris	16,141	284
Brass & Son	15,873	225
W. Shurmur	15,561	122
W. Shepherd	15,361	115
W. Johnson & Co., Ltd.	15,242	312
Kirk & Randall	14,923	283
W. Downs, Hampton-street, Walworth-road, S.E.	*14,740	*200

* Recommended by the Works Committee for acceptance.

LONDON.—For erecting a laundry centre and a technical room in connexion with the Stanley-street School, Deptford, and for other works, for the School Board for London. Mr. T. J. Bailey, Architect :—

		If brickwork be built in cement, add.
J. Garrett & Son	£2,960	£50
C. Dearing & Son	2,851	89
L. Whitehead & Co.	2,786	67
T. McCormick & Sons	2,778	67
J. Willmott & Sons	2,669	66
F. J. Coxhead, Leytonstone	*2,603	*54

* Recommended by the Works Committee for acceptance.

LONDON.—For the enlargement of the boys' and girls' departments of the Portobello-road School, Notting Hill, by eighty places, and for other work, for the School Board for London. Mr. T. J. Bailey, Architect :—

		If brickwork be built in cement, add.
Cowley & Drake	£3,018 0	£71 0
J. Garrett & Sons	2 673 0	90 0
G. Lyford	2,657 0	113 0
C. Dearing & Son	2,593 0	78 0
T. McCormick & Sons	2,551 0	69 0
L. Whitehead & Co.	2 475 0	55 0
T. W. Haylock	2,540 0	62 10
F. J. Coxhead	2,450 0	70 0
J. Willmott & Sons, Hitchin*	2,179 0	58 0

* Recommended by the Works Committee for acceptance.

LONDON.—For the erection of a school in Hugon-road, Wandsworth Bridge-road, to provide accommodation for 1,199 children, for the School Board for London. Mr. T. J. Bailey, Architect :—

		If brickwork be built in cement, add.
J. Shillitoe & Son	£19,190	£630
W. Brass & Son	19,049	—
W. Oldrey & Co.	18,721	268
C. Wall	18,657	539
C. Cox	18 631	428
Stimpson & Co.	18,390	745
D. Charteris	18,207	450
J. Grover & Son	18,122	430
W. Downs	18,017	449
Kirk & Randall	17,673	467
Holloway Bros.	17,619	429
W. Shurmur	16,633	357
W. Shepherd, 66, Bermondsey New-road, S.E.	*15,649	*354

* Recommended by the Works Committee for acceptance.

LONDON.—Accepted for the entire reconstruction of the sanitary system of the Soldiers' Daughters' Home, Hampstead, for the Committee. Mr. Chas. E. Gritton, A.M.Inst.C.E., engineer, London :—
Winser & Co., Buckingham Palace-road £1,086 5 0

LONDON.—For building new factory, Elephant-road, Walworth, for Mr. Robert Alford. Mr. W. M. Brutton, architect, 171, Queen Victoria-street, E.C. :—

William Rowe	£1,800 0	H. Burman & Sons	£1,688 0
William Smith	1,751 0	T. Hooper	1,611 10
F. & H. F. Higgs	1,720 0	Holliday & Greenwood	1,449 0
Walter B. Briant	1,711 0	G. S. Archer, Finsbury*	1,375

* Accepted.

LONDON.—For alterations, &c., to the "Rock" Tavern, No. 374, Walworth-road, for Mr. Oliver Newman. Messrs. Eedle & Meyers, architects, Railway-approach, London Bridge :—

Toms	£2,320	Rider & Son	£2,166
Colls & Son	2,280	B. E. Nightingale	2,059
Avis & Co.	2,273	Godfrey	2,037
Burman & Co.	2,250	Marsland	1,985

LONDON.—For providing and fixing canopy and buffet at the Guildhall, for the Corporation of London :—

Brass & Son	£953	J. Morter	£538
Cubitt & Co.	762	Cooper & Holt	491
Maple & Co.	697	B. E. Nightingale	490
Holland & Hannen	595	Lascelles	446
Trollope	555	Philps & Bisiker	437
Colls & Son	540		

LONDON.—For the re-decoration of the Manager's residence of the Kensington High-street Branch of the London and Westminster Bank (Limited). Mr. F. W. Hunt, architect, 30, York-place, Portman-square, W. :—

Phillips & Son	£249 14	G. Kent	£219 10
Philps & Bisiker	247 0	B. E. Nightingale	218 0
Staines & Son	238 0		

LONDON.—For rebuilding the "Cow and Calf" public-house, Eastcheap. Messrs. Bird & Walters, architects, Seymour-place, Bryanstone-square, W. :—

Williams	£4,756	Toms	£4,415
B. E. Nightingale	4,679	Todd	4,279
Hall, Beddal, & Co.	4,617	Anley	4,246
E. Lawrence	4,500	Burman & Co.	4,200

LONDON.—For rebuilding the "Blue Post's" tavern, King-street, Regent-street, W., for Messrs. Matthews & Canning. Mr. Cox Dear, architect. Quantities by Mr. J. Leaning :—

Sharpe	£4,300	Lascelles	£4,169
Patman & Co.	4,293	Cromwell	4,000
Maxwell	4,290	Faulkner	3,998
Charteris	4,258		

LONDON. — For alterations and additions to the "Crystal" public-house, Rotherhithe New-road, S.E., for Mr. Geo. Evans. Mr. W. M. Brutton, architect, 171, Queen Victoria-street, E.C. :—

John Allen & Sons	£1,275	H. L. Holloway	£1,079
William Smith	1,126	Pritchard & Renwick	1,044

LONDON.—For additions to the "Imperial" public-house, King's-road, Chelsea, for Mr. Charles Porter. Mr. W. M. Brutton, architect, 171, Queen Victoria-street, E.C. :—

H. Burman & Sons	£540	Pritchard & Renwick	£478
G. Parker	495	L. Whitehead	450

LONDON.—For the construction of a portion of a large sewer at Brockley. Mr. Henry S. Legg, engineer :—

Perry & Co.	£846	Nowell & Robson	£768
Killingback	800	Mowlem & Burt	721
Patman & Co.	795		

LONDON.—For repairs at Christ's Hospital. Mr. Henry S. Legg, surveyor :—

Hawtrey & Son	£649	Charteris	£440
Harrison & Spooner	572	Patman & Co.	410
Pitman & Son	519		

LONDON.—For rebuilding warehouse at rear of No. 7, Islington Green, for Messrs. Aldridge. Mr. E. J. Harrison, architect, 72, Chancery-lane :—

Lilley & Lilley	£680	Ward & Lamble	£517
Mander	600	Houghtone & Son, Stroud Green*	487
Macfarlane Bros.	588		
Benton	549		

*Accepted.

LONDON.—For rebuilding stables, Olbury-place, late Nos. 3 and 4, Nottingham-mews, Marylebone, W. Mr. Thomas Durrans, architect, 44, Upper Baker-street, N.W. :—

Patman & Fotheringham	£1,675	H. C. Clifton	£1,590
Hall, Beddall, & Co.	1,650	Gould & Brand	1,573
Staines & Son	1,629	G. E. Todd	1,570
J. Edgar	1,623	C. Dearing & Son (accepted)	1,473

LONDON.—For receiving wards for remand boys at the Workhouse, Marloes-road, for the Guardians of the Parish of St. Mary Abbotts, Kensington. Mr. T. W. Aldwinckle, architect, 1, Victoria-street, S.W. :—

G. Foxley	£1,056	Serf Bros. & Co.	£495
Leslie & Co.	682	Flew & Co.	470
W. Johnson & Co.	619		

LONDON.—For pulling down and rebuilding shop premises, No. 87, High-street, Marylebone, W. Mr. J. Randall Vining, architect and surveyor, 89, Chancery-lane, W.C. Quantities supplied :—

Foster & Dicksee	£2,455	W. Johnson & Co.	£2 130
J. Simpson & Son	2,330	A. Black & Son	1,945
C. Cox	2 173	J. & C. Bowyer, Upper Norwood (modified and accepted)	1,867
H. M. Dove & Co.	2,170		
E. Lawrence & Sons	2,167		

LONDON.—For temporary huts at the South-western Hospital, Stockwell, for the Metropolitan Asylums Board. Mr. Thos. W. Aldwinckle, F.R.I.B.A., Architect, 1, Victoria-street, S.W. :—

W. Johnson & Co., Ltd.	£1,886	Leslie & Co.*	£1,153
Humphreys, Ltd.	1,403		

*Accepted.

MEOPHAM (Kent).—For the erection of a pair of villa residences for Mr. J. W. Davis. Mr. C. Devereux, architect, Tottenham :—

Durling	£1,193	Elliott	£1,000
A. & W. Garnar	1,120		

MERTHYR-DOVAN (Glamorgan).—For erecting cemetery chapel at Merthyr-Dovan. Messrs. Bruton & Williams, architects, Cardiff :—

	Doulting Stone.	Mansfield Stone.	Bath Stone.
A. Berridge	£1 781 0 0	—	—
Watts	1,750 0 0	£1,940 0 0	—
F. Ashley	1,552 1 5	1,746 10 11	—
H. J. Money	1,500 0 0	—	—
J. Haines	1,338 0 0	—	—
W. Richards	1,325 0 0	1,680 0 0	—
F. Small, Barry*	1,219 0 0	—	£980 0 0
E. J. Ince	1,204 8 1	—	994 0 0
Jenkins & Arnold	1,181 0 0	1,477 17 0	1,131 0 0

*Accepted.

ORPINGTON (Kent).—For decorations to the village hall. Mr. St. Pierre Harris, architect and surveyor, 1, Basinghall-street, E.C. :—

T. Crossley	£172 0	Holt & Son	£125
F. Giles & Co. (accepted)	158 10		

PENDOYLAN (Glamorgan).—For the restoration of Pendoylan Church. Messrs. Bruton & Williams, architects, Cardiff :—

H. Welsh	£690	Turner & Sons	£498
Williams & Thomas	680	J. Haines, Cardiff*	490
Stephens & Bastow	609		

*Accepted.

PONTYCYMMER (Glamorgan). — For erecting St. Theodore's Welsh Chapel, Pontycymmer. Messrs. Bruton & Williams, architects, Cardiff :—

		Extra for Boundary Wall.
D. C. Jones & Co.	£3,757 0 0	£376 0 0
A. Berridge	3,597 0 0	220 0 0
J. Haines	3,408 0 0	264 0 0
H. Welsh	3,350 0 0	300 0 0
E. T. Hatherly, Bristol*	3,297 0 0	297 0 0
Hamar	2,702 5 3	160 7 0

*Accepted.

RIPON.—Accepted for alterations and additions to the Cathedral National Girls' school, Ripon. Mr. T. Butler Wilson, architect, Leeds and Harrogate :—

Mitchell & Webster, Ripon	£361 0 0
Hot-water.	
W. E. Dixon, Ripon	91 14 6

ST. HELENS (Lancashire).—For erecting new tun room and other works, at the Brewery, St. Helens, Lancashire, for Messrs. Greenall, Whitley, & Co. Messrs. Inskipp & Mackenzie, architects, 5, Bedford-row, W.C. Quantities by Messrs. R. L. Curtis & Sons :—

Latham	£3,430	Rothwell*	£2,915
Davies	3,200		

* Accepted.

Ironwork.

Daglish	£1,845 0	Robinson & Cooke	£1,576 0
Gimson	1,765 0	Edward Wood*	1,354 0
Brookfield Co.	1,652 10		

* Accepted.

UPTON PARK (Essex).—Accepted for erecting house and shop in Red Post-lane, Upton Park, E., for Mr. A. Rockliff. Mr. Fred. A. Ashton, architect, 3, Crooked-lane, E.C. :—

F. Voller £550 0 0

ST. PAUL'S CRAY (Kent).—For erecting lodge and stables at Sandy-lane, for Mr. T. H. Nash. Mr. G. St. Pierre Harris, architect and surveyor, 1, Basinghall-street, E.C. :—

W. Owen	£863	Somerford & Son, Clapham*	£689
Gregory & Co.	740		

* Accepted subject to modifications.

SOMERSET.—For constructing a reservoir at the Western Joint Asylum, Somerset, for the County Council. Messrs. Giles, Gough, & Trollope, architects. Quantities by Mr. C. H. Goode :—

Facey	£1,927	Pollard	£1,680
Claridge & Bloxham	1,731	Willcock, Wolverhampton*	1,586
Spiller	1,700		

* Accepted.

SURBITON.—For erecting a house on the Cranes Estate, Surbiton. Mr. Alfred Mason, architect, Kingston-on-Thames :—

J. Piller & Son	£2,390	W. H. Gaze	£2,139
G. C. Mortimer	2,365	R. Nicholls, Kingston*	2,125
H. J. Jarvis	2,275		

* Accepted.

SWINDON.—For erecting new boys' school at Upper Stratton, Swindon, for the Stratton St. Margaret School Board. Mr. William Drew, architect, Swindon. Quantities by the architect :—

T. Colborne	£2,936 0 0	C. Williams	£2,710 18 0
F. Reeks	2,824 0 0	Hy. Looker, Stratton, Swindon*	2,590 0 0
T. Barrett	2,785 9 3		
G. Wiltshire	2,750 0 0		

* Accepted.

TREHARRIS (Glamorganshire).—Accepted for the erection of a public hall and institute at Treharris. Mr. F. R. Bates, architect, Newport, Mon. :—

Morgan & Roberts, Newport £2,495 0 0

WOLDENHAM (Surrey).—For building house and stables, for Mr Robert Baker. Mr. F. A. Powell, architect :—

William Smith	£3,577	H. L. Holloway	£2 899
William Downs	3,537	J. Otway	2,640
H. Burman & Sons	3,425	Martin Taylor, Croydon*	2,522

* Accepted.]

WOODFORD (Essex).—For the erection of a post office, Woodford Essex, for Mr. J. W. Smith. Mr. J. C. Lewis, architect, Woodford. Quantities by Mr. Edward S. Mansergh, 28, Mount-street, W. :—

Harris & Wardrop	£1,449	R. Avard	£1,249
G. J. Hosking	1,327	J. Morter	1,197
J. Bentley	1,298	T. Osborn & Sons	1,111
F. J. Coxhead	1,273		

Road-making, Bromley, Kent.—Mr. Hugh S. Cregeen, Surveyor to the Bromley Local Board, writes :—In the list of tenders for making-up Oaklands-road, which appeared in your issue of last week, it was announced that that of Peill Bros. had been accepted; but since then an error of £40 has been discovered in their tender, making the amount £1,181. 5s., instead of £1,141. 5s., in consequence of which, Messrs. J. Mowlem & Co.'s tender of £1,175 has since been accepted.

The Builder Cathedral Series.

1891.

1. CANTERBURY	Jan. 3.	7. SALISBURY	July 2.
2. LICHFIELD	Feb. 7.	8. BRISTOL	Aug. 1.
3. ST. ALBAN'S	Mar. 7.	9. NORWICH	Sept. 5.
4. PETERBOROUGH	April 4.	10. ROCHESTER	Oct. 3.
5. WELLS	May 2.	11. LINCOLN	Nov. 7.
6. EXETER	June 6.	12. GLOUCESTER	Dec. 5.

1892.

13. ST. PAUL'S	Jan. 2.		
14. HEREFORD	Feb. 6.	20. WORCESTER	Aug. 6.
15. CHICHESTER	Mar. 5.	21. BANGOR	Sept. 3.
16. ELY	April 2.	22. ST. ASAPH	
17. LLANDAFF	May 7.	23. WINCHESTER	Oct. 1.
18. OXFORD	June 4.	24. TRURO	Nov. 5.
19. SOUTHWELL	July 2.	25. ST. DAVID'S	Dec. 3.

[Further arrangements will be duly announced.]

Post-free FOURPENCE HALFPENNY each, except Nos. 1, 2, 3, and 4, which are *out of print*; but the VIEW, PLAN, AND DESCRIPTION of CANTERBURY, LICHFIELD, ST. ALBAN'S, and PETERBOROUGH, have been re-printed, and they can now be had, price EIGHTPENCE each set; by post, 10d.

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The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

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GREENHOUSES,
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ESTIMATES GIVEN ON APPLICATION.

TO CORRESPONDENTS.

D. B. (we shall be glad to give the substance and result of the report when made. The mere statement that a report is to be made is hardly of much interest).—T. & S. (shall have attention).—C. R. K.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news-items) which have been duplicated for other journals, are NOT DESIRED.

All communications regarding literary and artistic matter should be addressed to THE EDITOR; all communications relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

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ILLUSTRATIONS OF OLD CHESTER.—Drawn by Mr. T. P. Ivison.

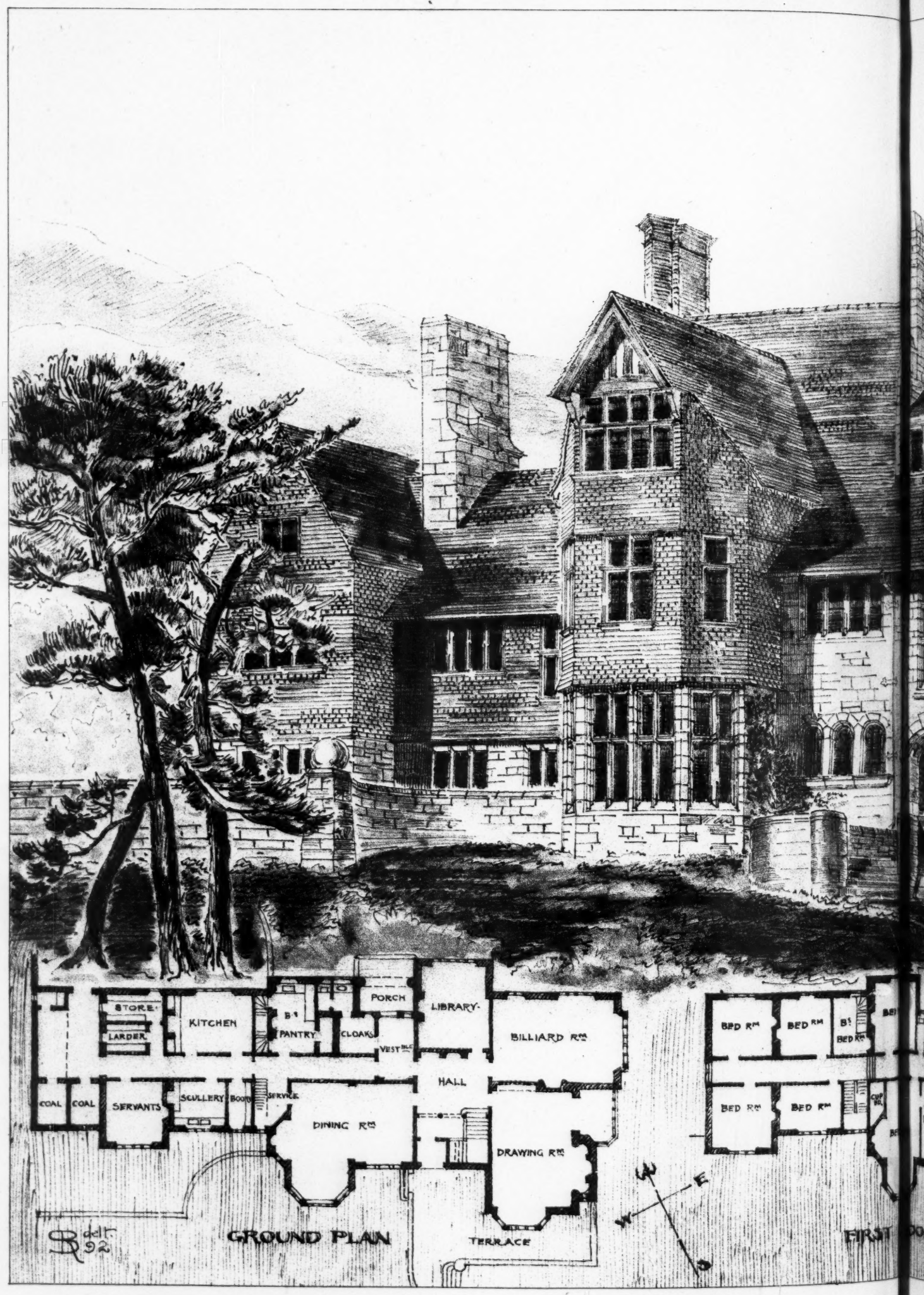
No. VI.—STAIRCASE, 24 WATERGATE ROW NORTH.

EDINGTON PRIORY CHVRCH,
WILTS: VIEW SHOWING RESTORATION
OF ANCIENT PARISH ALTAR, &c: 1892:

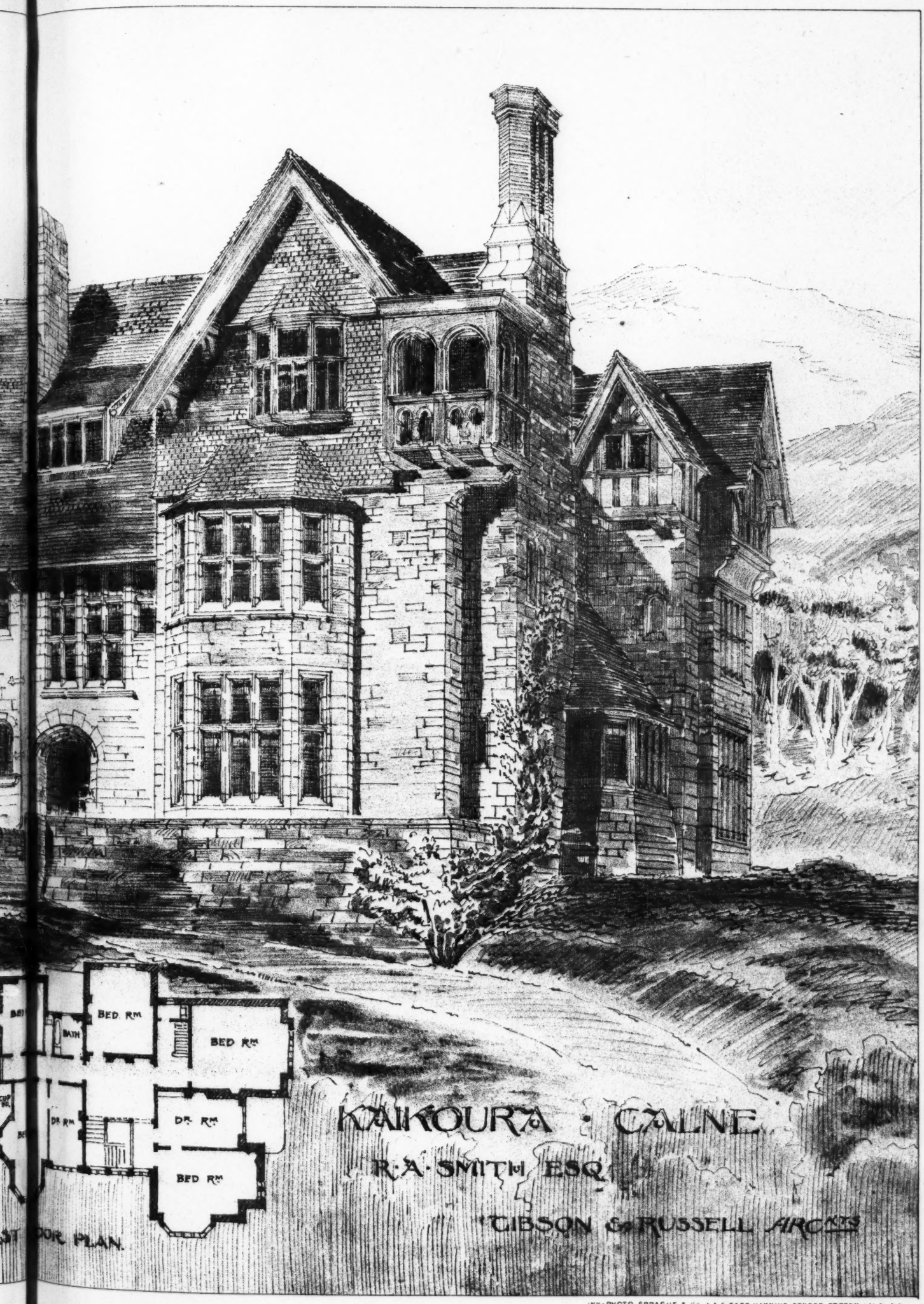
INK-PHOTO. SPRAGUE & Co 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

C. E. PONTING, F.S.A., ARCHITECT: 1887-92.

Royal Academy Exhibition, 1892.



Royal Academy Exhibition, 1892



ST DOOR PLAN.

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J. Henbest Capper M.A. A.R.I.B.A. Architect.

C.E. Mallows & Co.

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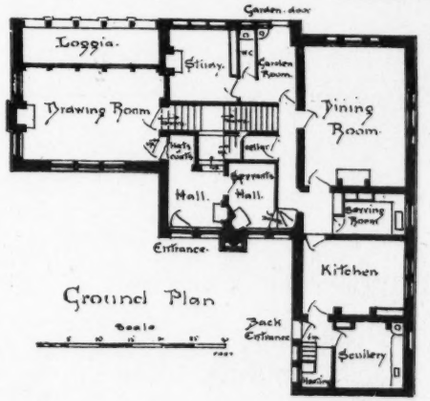
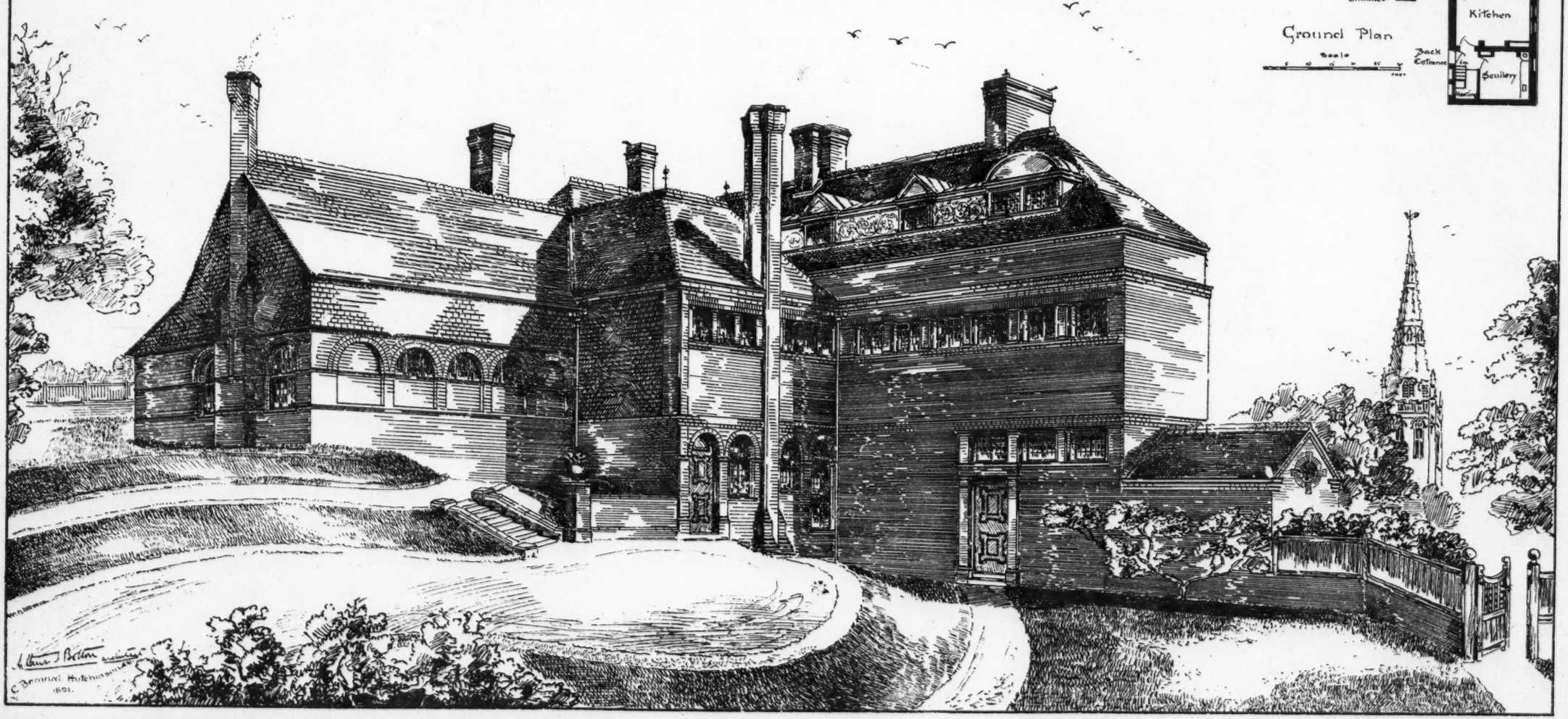
HOUSE: ON: A: HILL:





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DESIGN FOR A HOUSE.—Mr. A. T. Bolton, A.R.I.B.A., Architect.